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GOVERNMENT OF INDIA

The FIRST FIVE YEAR PLAN

PLANNING COMMISSION

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INTRODUCTION

The Planning Commission was set up in March, 1950 by a Resolution of the Government of India which defined the scope of its work in the following terms :

" The Constitution of India has guaranteed certain Fundamental Rights to the citizens of India and enunciated certain Directive Principles of State Policy, in particular, that the State shall strive to promote the welfare of the people by securing and protecting as effectively as it may a social order in which justice, social, economic and political, shall inform all the institutions of the national life, and shall direct its policy towards securing, among other things,—

(*a*) that the citizens, men and women equally, have the right to an adequate means of livelihood ;

(*b*) that the ownership and control of the material resources of the community are so distributed as best to subserve the common good ; and

(*c*) that the operation of the economic system does not result in the concentration of wealth and means of production to the common detriment.

Having regard to these rights and in furtherance of these principles as well as of the declared objective of the Government to promote a rapid rise in the standard of living of the people by efficient exploitation of the resources of the country, increasing production, and offering opportunities to all for employment in the service of the community.

The Planning Commission will—

(1) make an assessment of the material, capital and human resources of the country, including technical personnel, and investigate the possibilities of augmenting such of these resources as are found to be deficient in relation to the nation's requirements ;

(2) formulate a Plan for the most effective and balanced utilisation of the country's resources ;

(3) on a determination of priorities, define the stages in which the Plan should be carried out and propose the allocation of resources for the due completion of each stage ;

(4) indicate the factors which are tending to retard economic development, and determine the conditions which, in view of the current social and political situation, should be established for the successful execution of the Plan ;

(5) determine the nature of the machinery which will be necessary for securing the successful implementation of each stage of the Plan in all its aspects ;

(6) appraise from time to time the progress achieved in the execution of each stage of the Plan and recommend the adjustments of policy and measures that such appraisal may show to be necessary ; and

(7) make such interim or ancillary recommendations as appear to it to be appropriate either for facilitating the discharge of the duties assigned to it ; or, on a consideration of the prevailing economic conditions, current policies, measures and development programmes ; or on an examination of such specific problems as may be referred to it for advice by Central or State Governments."

2. In July, 1951 the Planning Commission presented a draft outline of a plan of development for the period of five years from April, 1951 to March, 1956. The Plan included a number of development projects which had been already taken in hand as well as others which had not yet been begun. The Draft Plan was divided into two parts, the first involving an expenditure of Rs. 1,493 crores and consisting largely of projects in execution which were to be implemented in any case, and the second proposing an outlay of Rs. 300 crores which was to be undertaken if external assistance were available. While the execution of development schemes which had been included in the plan after consultation with the Central Ministries and the State Governments was not to be affected, the Draft Outline was addressed to the country for general discussion and comment in the following words :

> " Planning in a democratic State is a social process in which, in some part, every citizen should have the opportunity to participate. To set the patterns of future development is a task of such magnitude and significance that it should embody the impact of public opinion and the needs of the community. We have, therefore, felt it necessary, before presenting our proposals in complete detail, to offer a Draft Outline of the Plan. The Draft is intended to be a document for the widest possible public discussion. We hope to have further consultations with the Central Ministries, State Governments and our own Advisory Board and Panels, and also to obtain the views of Members of Parliament before we finalise the Plan."

3. Since its publication, the Draft Outline has been examined in detail by the Central Government and the State Governments. It has been discussed in Parliament and most of the Legislatures in the States. A large number of organisations representing industry, commerce, labour, farmers and other interests have expressed their views. At the request of the Planning Commission, many educational institutions set up seminars of teachers and students to study the plan and send their comments to the Commission. Many district boards and municipal committees also commented on the Plan. In every district groups of officials and non-officials met together to study the Plan in relation to their local problems. Ever since its publication the Draft Outline has been a subject of extensive comment in the daily press and in periodicals. A considerable volume of literature in the form of books and pamphlets prepared by independent writers has also become available. Thus, as a result of the discussion which has taken place, every aspect of the proposals in the Draft Outline has been subjected to the fullest possible examination.

4. The Planning Commission has endeavoured to make a careful study of the material which has been received during the past eighteen months. It has had the opportunity also of working out details of many projects and pursuing its own studies in different fields. In each sphere of national development the Commission has conferred with the Central and State Governments and their experts as well as with men and women of knowledge and experience outside the Government. The Commission also consulted its Advisory Board and some of its Panels. Recently, the Commission has held consultations with representatives of the principal political parties, leading women workers and some members of Parliament.

5. In its final form, the Five Year Plan no longer consists of two parts and the various programmes have been brought together into a single plan. The Five Year Plan, which relates to the same period as in the Draft Outline, is now estimated to involve a total outlay

of Rs. 2069 crores. The broad allocation of resources between the main heads of development in the Plan as compared to that indicated in the Draft Outline is as follows :—

(Rs. crores)

	Outlay during 1951—1956		Percentage of total outlay	
	Five Year Plan	Draft Outline	Five Year Plan	Draft Outline
Agriculture and Community Development	360·43	191·69	17·4	12·8
Irrigation and Power	561·41	450·36	27·2	30·2
Transport and Communications	497·10	388·12	24·0	26·1
Industry	173·04	100·99	8·4	6·7
Social Services	339·81	254·22	16·4	17·0
Rehabilitation	85·00	79·00	4·1	5·3
Miscellaneous	51·99	28·54	2·5	1·9
TOTAL	2068·78	1492·92	100·0	100·0

6. All the development projects included in the Draft Outline are of course included in the Plan as it has been now prepared and, as mentioned earlier, many of them are in progress. A number of additions and changes in presentation have been made. The principal changes made in the Plan as compared to the Draft Outline are explained, however, by the attempt to strengthen the Plan, with due regard to the resources which could be foreseen, at those points at which it was felt that the earlier proposals fell short of the needs of the country. In the field of agriculture and community development, for instance, additional programmes have been introduced with a view to ensuring that the targets of agricultural production will be reached. These include a provision of Rs. 90 crores for community development projects, Rs. 30 crores for additional minor irrigation programmes and provision for the establishment of a national extension organisation. Among other urgent problems for which provision has been made may be mentioned soil conservation, resettlement schemes for landless agricultural workers, and training and experiments in co-operative organisation. In the field of irrigation and power development, in addition to providing for projects already in hand, funds have been allocated for undertaking certain new river valley schemes which are considered vital for the development of large regions served by them. To keep pace with progress in other sectors of the economy, especially in industry and irrigation and power, increased provision has been made for railways, roads, civil aviation, posts and telegraphs and ports. Programmes for major ports which did not find a place in the Draft Outline have now been included in the Plan.

7. In the Draft Outline, owing to the greater urgency of the programmes for agriculture and irrigation, the provision made for the development of industry in the public sector was insufficient. In the Plan as now presented, in addition to providing for an integrated steel plant, Rs. 50 crores have been allocated for further expansion of basic industries,

including manufacture of heavy electrical equipment and fertilisers, and for increased transport facilities required for industry and mineral development. Village industries, small-scale industries and handicraft, whose importance for the economy as a whole can scarcely be exaggerated, have been given greater emphasis in the Plan. In addition to the setting up of new boards for khadi and village industries and for handicrafts, the imposition of a cess on millmade cloth to assist the development of khadi and handloom, and measures taken for the reservation of certain lines of production in favour of the handloom industry, the Central Government's plan provides Rs. 15 crores for cottage and small-scale industries.

8. In the field of social services also, the Plan has several important programmes. These include a national malaria control scheme estimated to cost Rs. 10 crores, increased provision for scheduled tribes and scheduled areas and for scheduled castes and other backward classes, including criminal tribes, a programme for industrial housing costing about Rs. 49 crores, increased allocation for technical education and provision for youth camps and labour service for students. Provision is also made for carrying forward the rehabilitation of displaced persons from West Pakistan and it has been made clear that if circumstances so warrant it will be necessary to provide larger funds for the rehabilitation of displaced persons from East Pakistan.

9. In three other directions important additions have been made. In order to avoid adverse effects on the implementation of the Plan in the States on account of monsoon failures which occur from time to time in different parts of the country, a provision of Rs. 15 crores for assistance to scarcity-affected areas has been made in the Central Government's plan. Secondly, each State plan is being broken up into plans for districts and sub-divisions of districts so that these may be further supplemented through the effort and co-operation of the local people. In the nature of things, State plans cannot provide for all the possible needs of the people and it is necessary both to integrate them with the programmes of district boards and municipalities and to add to them other local programmes designed to meet the felt needs of the people. In addition, to assist local works to which the people themselves contribute in labour and otherwise, the Plan allocates a sum of Rs. 15 crores over the next three years. Finally, a national plan which embraces both the public and the private sectors may yet be incomplete unless the enthusiasm and support of large numbers of voluntary organisations and voluntary workers engaged in constructive work can be harnessed for national development. To provide an increasing field of work for the 'people's sector', as it were, the Plan provides a sum of Rs. 4 crores to be utilised for assistance to voluntary social welfare organisations at the instance of a social welfare board to which a great deal of administrative authority may be devolved. A word may also be added about the provision of Rs. 50 lakhs made in the Plan for research and investigation into social, economic and administrative problems relating to national development. In many fields sufficient data are wanting to enable policies to be formulated. It is proposed, therefore, to organise, in co-operation with universities and other institutions, special investigations into selected problems of development.

10. Besides the plan for the public sector, the Planning Commission has formulated development programmes for forty-two industries in the private sector. These programmes have been prepared in co-operation with the Ministry of Commerce and Industry and after full discussion with representatives of individual industries. The programmes for industrial development have been indicated briefly in this report and are to be presented in a separate volume.

11. This report on the Five Year Plan sets out the programmes of development and also outlines general proposals and policies in each field of development. The report is divided into three parts. The first part contains an analysis of the process of development in an under-developed economy and indicates the long-term goals towards which national effort is to be directed. The objectives, priorities and techniques of planning are set out at some length and an assessment is made about the resources which have to be mobilised in order to carry out the Plan. The first part of the report concludes with a summary statement of the Five Year Plan and of what is sought to be achieved through it. The second part of the report is concerned with administration and public co-operation. Several suggestions are offered for the reform of public administration. On the question of administration of development programmes at the district level, where vital nation-building work is undertaken and the participation of the people is all-important, a number of proposals are offered for consideration and action on the part of State Governments and other authorities. This portion of the report closes with the consideration of the problems of public co-operation in national development, a theme which, because of its high importance and urgency, recurs throughout the report. In the third part of the report, we outline the various programmes of development. These are grouped under three broad heads, namely, agriculture, irrigation and community development ; industry and communications ; and social services and employment. Each aspect of development is taken up in turn, needs and resources assessed and the Commission's own proposals for policy and action presented. In a separate volume, details are given concerning the principal development schemes included in the Five Year Plan.

12. Important questions of policy relating, for instance, to the land problem, the food problem, provision of finance for agriculture, common production programmes for small-scale and large-scale industries, selection of irrigation and power schemes and conservation of mineral resources have been under close examination in the Planning Commission. In making its recommendations, the Commission is conscious that the framing of social and economic policies in different fields is a continuous process and that, within the framework of priorities and objectives now formulated, such changes as may be necessary in the interest of national development will be made as further experience is gained and ideas are tested in practice. In the field of policy the Central and State Governments have to act in close co-operation with one another. Such co-operation will be greatly facilitated as a result of the setting up in August, 1952 of the National Development Council which includes the Prime Minister of India and the Chief Ministers of all States.

13. The fulfilment of the Five Year Plan calls for nation-wide co-operation in the tasks of development between the Central Government and the States, the States and the local authorities, with voluntary social service agencies engaged in constructive work, between the administration and the people as well as among the people themselves. Although several programmes included in the Plan are already under way, it is important that, through sacrifice borne equally by all citizens, the effort and resources of the entire nation should be mobilised in support of the Plan so that, during the coming years, the tempo of development can be greatly increased and the Plan becomes a focus of intense activity and a field of common endeavour throughout the country.

PART ONE

THE PLAN

CHAPTER I

THE PROBLEM OF DEVELOPMENT

1. Planning : Economic and Social Aspects

The central objective of planning in India at the present stage is to initiate a process of development which will raise living standards and open out to the people new opportunities for a richer and more varied life. The problem of development of an under developed economy is one of utilising more effectively the potential resources available to the community, and it is this which involves economic planning. But the economic condition of a country at any given time is a product of the broader social environment, and economic planning has to be viewed as an integral part of a wider process aiming not merely at the development of resources in a narrow technical sense, but at the development of human faculties and the building up of an institutional framework adequate to the needs and aspirations of the people.

2. An underdeveloped economy is characterised by the co-existence, in greater or less degree, of unutilised or underutilised manpower on the one hand and of unexploited natural resources on the other. This state of affairs may be due to stagnancy of techniques or to certain inhibiting socio-economic factors which prevent the more dynamic forces in the economy from asserting themselves. Corresponding to each stage of development, there tends to grow a certain economic and social stratification which is conducive to the conservation of the gains from the use of known techniques. Such stratification has a part to play in social progress. But, beyond a point, it hampers innovation and change, and its very strength becomes a source of weakness. For development to proceed further, a re-adaptation of social institutions and social relationships thus becomes necessary. In planning for a better economic order, the close interrelation between the technical and social aspects of the process of development has to be continually kept in view. While there is need for concentrating effort on the more immediate problems, planning implies the readiness on the part of the community to view the social process as one whole and to take action designed to shape this process along desired lines over a defined period.

3. In spite of considerable advance in public thinking on the subject, the acceptance of such an approach to the problems of economic development and social change represents a relatively new phase in policy-making and in administration. Planning involves the acceptance of a clearly defined system of objectives in terms of which to frame over-all policies. It also involves the formulation of a strategy for promoting the realisation of the ends defined. Planning is essentially an attempt at working out a rational solution of problems, an attempt to co-ordinate means and ends ; it is thus different from the traditional hit-and-miss methods by

which 'reforms' and 'reconstruction' are often undertaken. A planned economy has inevitably in view a somewhat wider time-horizon, to which the day-to-day decisions have to be related. And yet, practical policy cannot operate in terms of mere set doctrines ; it must satisfy certain pragmatic tests. In spite of the considerable developments in economic and social sciences in the last few decades, our knowledge of human motivation and of social processes is but limited. We cannot always say for certain that a given set of causes will produce a particular, clearly definable, set of results and none other ; we do not always know at what rate the effects of a particular change in a part of the system will be transmitted to the other parts of the system. Responses of individuals or of groups of individuals and of classes cannot always be predicted in advance. Even if the conceptual relationships between different aspects of the phenomena under study are clearly understood, there is often the lack of precise statistical data on which to base an assessment of the requirements of a given situation. It follows that a considerable part of the planning authority's task is to assess the significance of some of these indeterminate or partially known factors at work in the life of the community and to recommend policies on the best judgment available. This is particularly so in India today.

4. The urge to economic and social change under present conditions comes from the fact of poverty and of inequalities in income, wealth and opportunity. The elimination of poverty cannot, obviously, be achieved merely by redistributing existing wealth. Nor can a programme aiming only at raising production remove existing inequalities. The two have to be considered together ; only a simultaneous advance along both these lines can create the conditions in which the community can put forth its best efforts for promoting development. The problem, therefore, is not one of merely re-channelling economic activity within the existing socio-economic framework ; that framework has itself to be remoulded so as to enable it to accommodate progressively those fundamental urges which express themselves in the demands for the right to work, the right to adequate income, the right to education and to a measure of insurance against old age, sickness and other disabilities. The Directive Principles of State Policy enunciated in Articles 36 to 51 of the Constitution make it clear that for the attainment of these ends, ownership and control of the material resources of the country should be so distributed as best to subserve the common good, and that the operation of the economic system should not result in the concentration of wealth and economic power in the hands of a few. It is in this larger perspective that the task of planning has to be envisaged.

5. A process of all-round and orderly development, such as is indicated above, must inevitably take time to come into full fruition. Large scale changes in modes of production, in commercial and industrial organisation and in the institutional framework of corporate life cannot be seen through within a brief period of four or five years. In the initial stages of development, divergence in the economic and social interests of different sections of the community may create special problems. While this fact has to be recognised, persistent effort must be made to give a new sense of direction and purpose to the community. It is important also to ensure that in the process of development, the forces of growth from within are not stifled by attempts abruptly to superimpose preconceived patterns of life and activity. The strengthening of these inner forces and the creation of new institutions must proceed side by

side so as to facilitate rapid advance through a process of interaction. The modern world is changing so rapidly that it is not enough to think in terms of slow changes and marginal adjustments, a minor shake-up here and a little cementing elsewhere. An underdeveloped country which has suffered long from the effects of cramped development desires inevitably to progress rapidly and in many directions ; the aim of planning must be to make this possible. Political independence provides the needed opportunity. It is therefore natural that improvement in economic and social conditions through the acceptance of more progressive ideas and through suitable institutional changes is regarded as the practical test for judging the adequacy of the new political system.

6. The rapid advances in science and technology over the last few decades have opened out new possibilities in the direction of abolition of want and the restoration of man to a new sense of dignity, but they also carry potentialities of harm and danger. Our knowledge of the socio-economic changes which utilisation of these techniques calls for is neither complete nor certain. In the nature of the case, the problem does not admit of a generalised solution. Conditions vary as between countries, and each country has to evolve a solution in the light not only of contemporary conditions but also of its traditions and culture. In planning for a transformation along the right lines, there are many pitfalls to be avoided, and it is of the utmost importance to strike the appropriate balance between various considerations so as to secure the optimum pattern and rate of progress. Parallels from past history or from contemporary conditions in other countries are useful upto a point, but they cannot provide a complete answer. A nation, like an individual, has to work out its inner potentialities by a process of experimentation. All that can be said is that there is need, on the one hand, for clarity in regard to basic values and, on the other, for readiness to adapt practical solutions to the concrete problems arising in the process of transition to a different economic and social order.

7. We should like in this context to stress the essential political and administrative conditions essential to successful planning. Briefly these are :

(*a*) a large measure of agreement in the community as to the ends of policy ;

(*b*) effective power, based on the active co-operation of citizens, in the hands of the State ; and, earnest and determined exercise of that power in furtherance of these ends ; and

(*c*) an efficient administrative set-up, with personnel of requisite capacity and quality.

A national plan has to be an expression of a basic unity of purpose in the community. It is this unity which would constitute the ultimate sanction behind the plan, give it driving force and evoke the necessary sacrifice and effort on the part of members. Joined to this unity of purpose must be effective power in the hands of the State to be exercised with the necessary persistence and determination in order to ensure the furtherance of accepted ends. Constructive use of this power calls for integrity, efficiency and responsiveness in administration. The creation and maintenance of these basic pre-requisites of economic and

social growth have to be considered as matters deserving continuous and careful attention, and if we revert to this theme several times in this report, it is because we feel that the need for creating in the country an environment favourable to progress can hardly be overemphasised. The changes in administration appropriate in the context of the new role of the State are dealt with in detail in subsequent chapters.

8. The task of organising a democracy for rapid and coordinated advance along several lines is one of special difficulty. The party in power has not only to carry public opinion with it; it has to get the active co-operation of all sections. In a democratic country, every citizen is free to think and vote as he likes, and political parties have the right freely to canvass public support for their programmes and in the event of securing a majority in the legislature to form the government. Under these conditions, the greater the responsiveness of the party in power to trends of opinion outside, the greater will be its effectiveness for action. The smooth functioning of the party system rests on an underlying agreement as to objectives, though there may be differences as to approach or to the pace of change with reference to certain problems. These differences are a necessary concomitant of democracy ; they ensure a continuous re-examination and re-adaptation of governmental policies. The rights of free expression of opinion and of freedom of organisation inhere in the very concept of government by consent. Through these alone is a vigorous, creative political life possible. At the same time, it is evident that the problems of the modern world are too complex to be dealt with in terms of rival or opposing programmes of action. On various matters, different parties tend inevitably to come together and co-operate. For planning to proceed with the necessary momentum and continuity, it is essential that the country adopts a programme of action which reflects the unity of outlook and approach among the members of the party in power and draws forth at the same time the support and co-operation from shades of opinion outside the party. It is through enlargement of the area of agreement that conditions can be created for the most effective mobilisation of the community's resources towards the common objective of all-round economic development.

9. Democratic processes are complex, and they make large demands on the government as well as the governed. It cannot be assumed that the apparatus of democratic forms or procedures necessarily ensures the preservation of the basic values which a democratic way of life connotes. Real democracy means much more than adult suffrage and parliamentary government ; it means a reordering of social relationships in terms of new values. It is not without significance that in several parts of the world the emergence of a new leadership determined to carry through far-reaching economic and social changes in keeping with the needs and urges of the people has been accompanied by a great upsurge of public enthusiasm and a release of the pent-up energies of the community. The relationship between political forms and the spirit underlying them is a vast and intricate subject in which no easy judgments are possible. But, it must be emphasized that for democratic planning to succeed, it will have to energise the entire community and to place before it a goal of endeavour which will call forth all its latent creative urges. Under pressure of crisis such as war, democracies have proved capable of effective action on a mass scale, and there is no doubt that once the community has

come to appreciate the vital significance of the tasks in hand, it will rise to similar heights for constructive purposes also. The crucial factor in organising the community for action is leadership, and, in a democracy, not merely leadership at the top but at all levels.

10. Under the Constitution, India is organised as a federation, in which the Central Government and the Governments of States have their assigned spheres of action. There are certain concurrent subjects in which the Centre as well as the States can undertake legislation. Economic and social planning is in the concurrent list, as this is a subject in which the Centre as well as the States are interested and have to work in unison. The Centre has certain emergency powers, but normally coordination of policies has to be effected through mutual consultation. This system of consultation and of formulation of policies on the basis of over-all national requirements will have to be strengthened in the interests of planning. Care will have to be taken to see that the plan is implemented throughout the country as a single coordinated whole. The National Development Council which has been set up recently and which comprises the Cabinet, Ministers of States and the members of the Planning Commission, with the Prime Minister as Chairman, is intended to secure this result. It is obvious that without complete coordination of policies and timely, concerted action, there is danger of waste and misdirection of effort, which may have consequences extending far beyond the area of responsibility of any single authority, and this, it must be recognised, places special responsibilities on the Centre.

11. A planned economy aiming at the realisation of larger social objectives entails a vast increase in governmental functions For these to be discharged efficiently, appropriate local, regional and functional organisations have to be built up and strengthened. Each of these must have a defined sphere of action and responsibility, and must be able to function with a measure of autonomy. Arrangements for the necessary coordination between them must be made at various levels from the village upwards. The activities of all developmental institutions in the country, official and non-official will have to be reorientated in terms of the requirements of the Plan, and in this process, due stress must be laid on the appropriate role of various local and functional organisations. The function of the Central Government is to evolve a national plan, to work out a coordinated policy for implementation of the same, to watch and assess the progress of major development schemes in the different parts of the country, and constantly to initiate and promote action in furtherance of the objectives and targets defined.

II. The Determinants of Economic Development

12. While developmental planning, as stated above, is an all embracing process, which cannot be compartmentalised, the accent of endeavour under present conditions in India has to be on economic development. The latter may in a sense be regarded as a consequence of intellectual, social and cultural advance. It is true, nevertheless, that economic development of an underdeveloped country cannot proceed far unless the community learns how to get from its resources of men and materials a larger output of commodities and services.

13. In the last four or five decades, there has been considerable industrial development in India, accompanied by urbanisation and expansion of commerce. Large towns and cities have grown and transport and communications have developed extensively. The isolation of the village has been broken and the average citizen lives in an environment significantly different from the one in which he lived and worked fifty or sixty years ago. Indian enterprise has made considerable headway, and the country has now considerable experience in the fileds of modern business, industry and finance. New economic and social relations have emerged, giving rise in turn to a general desire for more rapid change. But the development that has taken place is partial and limited when judged in terms of the country's needs and potentialities. Industrialism and the use of modern techniques have affected only limited segments of the economy. Agriculture is still the mainstay of life for about 70 per cent of the population, and productivity in this sector is exceedingly low. The size of agricultural holdings has progressively diminished ; the old cottage and small-scale industries have been decaying, and the rural population which constitutes about 83 per cent of the total suffers from chronic underemployment and low incomes. Population has increased by more than fifty per cent in the last fifty years, but the growth of alternative occupations either in the rural areas or in the towns has not been on a scale which could absorb this growing population. In the limited spheres which have registered expansion, the level of productivity and the level of incomes have naturally been higher. But, for the community as a whole, the economic development of the last few decades has brought no significant improvement in standards of living and opportunities for employment, and has perhaps accentuated to some extent inequalities of income and wealth.

14. The pace of economic development depends on a variety of factors which constitute the psychological and sociological setting within which the economy operates. A major element in this setting is the community's will to progress and its readiness to develop and adopt new and more efficient methods and processes of production. Basically, development involves securing higher productivity all round and this is a function of the degree of technological advance the community is able to make. The problem is not one merely of adopting and applying the processes and techniques developed elsewhere, but of developing new techniques specially suited to local conditions. Modern technology is changing rapidly and no country can hope to maintain a steady pace of advance unless it keeps abreast of current developments. Techniques in turn affect and are affected by economic and social organisation. Certain forms of economic and social organisation are unsuited to or incapable of absorbing new techniques and utilising them to the best advantage. To some extent techniques must of course be adapted to economic and social organisation, but the latter has also to change in order to accommodate new techniques which need to be applied not merely in one or two isolated lines but in several lines of economic activity so that advance in one line could react on and stimulate advance in others.

15. These are aspects of the problem of economic development which have to be constantly kept in view. Given these basic conditions of rapid and sustained progress, institutional as well as others, the key to higher productivity and expanding levels of income and employment

lies really in stepping up the rate of capital formation. The level of production and the material well-being a community can attain depends, in the main, on the stock of capital at its disposal, *i.e.*, on the amount of land *per capita* and of productive equipment in the shape of machinery, buildings, tools and implements, factories, locomotives, engines, irrigation facilities, power installations and communications. The larger the stock of capital, the greater tends to be the productivity of labour and therefore the volume of commodities and services that can be turned out with the same effort. The productivity of the economy depends on other things also, as for instance the technical efficiency and attitude to work of the labour that handles the available capital equipment. But the stock of capital reflects in a concrete form the technological knowledge that underlies the organised processes of production, and while other factors are important and essential a rapid increase in productivity is conditional upon additions to and improvements in the technological framework implicit in a high rate of capital formation.

16. The conditions in which economic development was achieved in the course of the last century have naturally differed from country to country, but a common feature of almost all of them is the high rate of capital formation which characterised periods of expansion. In times when the whole capital structure of a country is being transformed, the normal replacement of existing equipment becomes itself to some extent a means for introducing improvements in the technological framework of production, so that, in assessing rates of capital formation achieved, the resources set apart for this purpose must be also regarded as a material factor in determining the tempo of development. For Britain statistics on national income and investment are not available for the first half of the nineteenth century, which was perhaps the most significant period in its economic development, but the available data for 1870-1913 show that net investment in this period was on an average more than 10 per cent of the national income and in prosperous years as much as 15 per cent. In the United States, the rate of capital formation was higher over the years 1869-1913; net investment represented 13 to 16 per cent of the national product while gross investment ranged between 21 and 24 per cent. In Japan, new capital formation in the decade 1900-1909 is estimated to have averaged about 12 per cent of the national income ; this rate appears to have risen to 17 per cent in the following decade, though it declined again to 12 per cent. in the period 1920-1929. More recently, the U.S.S.R. furnishes an instance of a high rate of investment being achieved as a matter of deliberate State policy and action. The First Five Year Plan of the Soviet Union had a target of net investment amounting to "between a quarter and a third of the national income" ; the actual achievement was perhaps slightly lower. At any rate, though the Second Five Year Plan envisaged a somewhat lower ratio of capital formation to national income, it would appear on a fairly conservative estimate that the rate of net investment in the U.S.S.R. in the decade 1928-1938 was of the order of 20 per cent of the national income, if not more.

17. The data given above are not of a nature which would warrant any firm relationships being deduced between rates of investment and rates of develpment, nor can they be used for making comparisons as between countries or as between widely separated periods within the

same country. Even conceptually, these relationships are very complex. It is virtually impossible to evaluate in quantitative terms the psychological and social forces which have played a part in shaping the pace and pattern of development under different circumstances. Nevertheless, the available evidence, however scanty, may be used for judging broadly the scale of effort involved in relation to the results obtained. In the United Kingdom, a rate of net investment which fluctuated between 10 and 15 per cent of the national income went hand in hand with an increase of over 150 per cent in the national income between 1870 and 1913. In the United States, with a somewhat higher rate of investment, which was accompanied also by large scale immigration and settlement in virgin territory, national income increased nearly five-fold between 1869 and 1913 ; the increase in *per capita* income in this period is estimated at over 130 per cent. In Japan, with the population growing at an average annual rate of about 1¼ per cent, *per capita* income is estimated to have been doubled between 1878 and 1912; it was doubled again between 1913 and 1938. Varying estimates have been made of the achievements of the Soviet Union in terms of national income, but, taking again a conservative estimate, it would appear that with a rate of net investment of about one-fifth (or probably a little more) of the national income the increase in the national product in the period from 1928 to about 1940 was around 130 per cent.

18. These relationships are more suggestive than conclusive, but it is fairly obvious that a doubling of *per capita* incomes within a generation or so (that is in 25 to 30 years) required, in most of these countries, a rate of net investment of the order of 12-15 per cent of the national income. More rapid rates of development have required, apart from other things, still higher rates of investment as in the U.S.S.R. It would appear on the whole that, in under developed countries with low standards of living and rapidly increasing population, a rate of growth commensurate with needs cannot be achieved until the rate of capital formation comes up to around 20 per cent of the national income.

19. Very little information is available on the rate of investment and on the trends in national income in India in the last few decades. Rough estimates based on scattered data suggest that, as in other underdeveloped countries, the resources devoted to net capital formation today probably amount to about 5 per cent of the national income. It is true that, where manpower is plentiful relatively to the land and other capital equipment available, development has to be based to a great extent, at least in the initial stages, on labour-intensive processes. Even so, without a big increase in the rate of investment and through it in productive capital, substantial and progressive improvement in the level of incomes and of living standards cannot be secured. India has considerable resources of water, minerals and power still to be harnessed or exploited. Large areas of the country remain undeveloped for lack of basic services like transport, communications, irrigation and power. The use of machinery is limited to narrow spheres of industry, and the bulk of the country's labour force works with tools and implements which add little to the productivity of labour and thus keep real incomes low. There is also shortage of buildings for residential purposes as well as for schools, hospitals, welfare centres, factories and the like. All these have therefore to be built up, side by side of course with the knowledge of how to use the capital equipment thus built up to the best advantage. It has

been estimated that for a population growing at the rate of 1¼ per cent per annum, the rate of investment needed for maintaining *per capita* incomes constant is generally between 4 and 5 per cent of the national income. Such a generalisation cannot obviously be interpreted literally, but the nature of the relationship suggested may explain broadly the failure of the Indian economy in the last few decades to respond adequately to the needs of a growing population and of higher standards of living and employment.

20. A somewhat low rate of capital formation might have been adequate for countries like the U.K. and the U.S.A., in which modern industrialism took root early. The under developed countries which make a late start have to aim at comparable development within a briefer period. Japan and the U.S.S.R. are instances in point. Some of the countries in South Eastern Europe which are now planning for rapid development have also envisaged high rates of investment. In Hungary, 10 per cent of the national income was devoted to net investment in 1947, the first year of her planning, but this appears to have been stepped up to 18 per cent in 1949. In Poland, gross investment in the post-war period has ranged between 20 and 25 per cent. Outside this region and under more normal conditions, Norway is known to have attained a rate of net investment of 15 per cent and Finland a rate of 18 per cent even before the Second World War. The question therefore is not whether a high rate of investment could be aimed at or achieved by relatively under developed countries, but rather under what conditions and in what stages it could be attained.

21. Investment implies applying productive resources to the building up of capital equipment. These resources could come eihter from utilisation of resources hitherto unutilised or by way of diversion from the production of consumer goods. An underdeveloped country has a certain advantage in that it has large resources of unutilised or underutilised manpower. By utilising these, capital formation can be stepped up without drawing away to any larger extent resources employed in the production of consumer goods. Idle manpower thus constitutes a large investment potential. But it must be recognised that, in the initial stages of development, the scope for directly utilising such manpower tends to be somewhat limited. For one thing, the unutilised labour available for productive work is often also unskilled labour, which would have to be trained before it could be recruited for the new works to be undertaken. Some of the problems involved in direct investment of under employed manpower could be overcome by efficient organisation. Still, in practice, mobilisation of idle manpower on a large scale cannot but result in the generation of considerable money incomes in advance of a corresponding increase in output. This is likely to create inflationary pressures which might be felt strongly at particular points in the system, impinging more heavily on the real income of some sections of the population than on others. A measure of privation to start with and austerity for a fairly long period are thus unavoidable under conditions of rapid development even in countries with vast unutilised resources. The strain of development on the economy might be felt in a variety of ways : scarcities, high prices, disparate movements of incomes of different classes, bottlenecks in production, strain on transport, etc. To some extent, this strain can be moderated through appropriate measures of policy, but the fact of strain on the economy will remain. In determining the tempo of

development, which, as has been indicated above, would mean raising the rate of investment from about 5 per cent of the national income to a level of something like 20 per cent, a view has therefore to be taken as to the pace at which the required organisational and institutional changes can be made without engendering too much economic and social instability.

22. The level of saving is to a great extent dependent on the level of national income ; the higher the national income the higher normally should be the proportion saved. However, this is not always true. In the United States, considering the rate of increase in income *per capita* and the high level of this income even to begin with, the rate of net saving achieved in the period 1870 to 1913, *viz.*, 12 to 15 per cent, was relatively low. On the other hand, Japan with a lower level of incomes was able to attain a remarkably high rate of investment out of its own savings. The proportion of national income that is saved and made available for investment depends upon psychological and institutional factors. Social customs and habits, the distribution of incomes, the rates at which incomes of different classes go up and the efficacy of banking and other institutions for mobilising savings—all these—play a part in determining the rates of saving attained. The high rate reached in Japan has been explained by the fact that "the Japanese capitalists spend very little on personal consumption, that the rural population and urban working proprietors are exceptionally thrifty and, indeed, the wage earners themselves save a substantial proportion of their incomes". There is also a further factor which may be noticed here. Between 1878 and 1940 the price level in Japan rose by about 400 per cent while, in the United States in the corresponding period, the increase was less than 100 per cent. Rising prices tend to enforce rates of savings which would not otherwise be possible. This factor has probably played a not insignificant part in the U.S.S.R. also where it is clear that prices of consumer goods went up sharply in the decade 1928-1938.

23. The programme of investment that can be undertaken at any particular time depends primarily on two factors : the rate of saving in the community, and the volume of unutilised human and material resources which can be used for direct investment. In the earlier stages of development, as already mentioned, though the unutilised resources would be considerable the scope for using them for stepping up the rate of capital formation might be restricted by either lack of technical skill or shortages of specific commodities and services. In this period, therefore, the reliance on savings has to be correspondingly greater. As capital formation gets under way and the basic framework of services like transport, communications, irrigation and power is built up, the scope for utilising underemployed resources will expand rapidly. The problem is to get the right start. Once this is secured and fresh capital formation started on a significant scale, it increases the ability to undertake further complementary investments, thus creating also new opportunities for employment. Further investments then get the benefit of 'external economies' which lower costs and increase the profitability of still further expansion. It is thus that the vicious circle of low output, low savings and low investment is broken and the economy started on an upward course.

24. In the initial stage—which is the critical period in development—there are clearly two alternatives open. One is to impose on the community a high rate of saving through taxation, loans, price inflation, or by any other means and to utilise the resources thus made available for

a sharp increase in the rate of capital formation. This has certainly its merits, as, in this way, not only would development be rapid but there would be immediately a large increase in employment. But, this increase in employment will not lead to a corresponding increase in spendable incomes ; the community as a whole will have very little more to consume than before and there would be set up severe inflationary pressures. This is the price for more rapid development later. The other alternative is to step up the rate of capital formation more gradually, but this would mean that progress would be correspondingly less rapid. Since the objective of planning is, in fact, to promote rapid development, the problem is one of stepping up the rate of investment by defined stages, so as to minimise the hardships in the initial period, but taking care at the same time that the community does put forth within a relatively brief period the big effort needed.

25. On this analysis, the question is in what manner and how quickly the rate of capital formation in India can be stepped up, consistently with other objectives, from about 5 per cent of the national income to, say, about 20 per cent. The answer depends upon the rate at which the national income increases as development proceeds and the proportions of this increase which can, so to say, be ploughed back into investment. The larger the proportion of the increments to national income that can thus be ploughed back into investment, the greater is the pace at which development can be accelerated. The principle is, in essence, simple. If, for instance, a community starting with a 5 per cent rate of saving increases its total output by, say 10 per cent, and if in the following period capital formation is stepped up by an amount equal to half the additional output, the rate of saving would almost get doubled in the process. If it is not desired to secure a high rate of capital formation right at the start at a cost of excessive privation which a reduction in the initial levels of consumption would entail, the goal of policy must be to ensure that a high proportion of the additional incomes that accrue as a result of development is saved and invested. This will, no doubt, mean that the rate at which the initial levels of consumption can be allowed to go up will rise only slowly, but the pressure on consumption standards will at least be no worse than before and it might well become possible to permit moderate improvements. In other words, such a programme for stepping up capital formation calls for sustained austerity rather than any excessive degree of privation and suffering.

26. It is necessary to visualise the problem of development over a period of twenty-five or thirty years and to view the immediate five year period in this broader context. In formulating a plan of development for a particular period, an estimate of what is feasible must, no doubt, carry more weight than abstract reasoning as to a desirable rate of growth. But, there is clearly need for looking beyond immediate possibilities and for taking a view of the problem even from the beginning in terms of continuing and over-all requirements, and for preparing the ground in advance. Precisely for the reason that the development of a country is a somewhat long-term process, the institutional and other factors which affect it can be changed to the desired extent and in the desired direction through conscious effort. Moreover, a programme of development even for the short period would fail to have direction and perspective unless it is in some way linked to certain long-term targets and objectives relating to the kind of economy and social framework which it is proposed to evolve. In other words, while it is

important to preserve throughout a pragmatic and non-doctrinaire approach, and also to bear in mind the limitations involved in any calculation of long-term development possibilities, it is of the essence of planning that it must have a wider time-horizon than immediate requirements and circumstances might seem to indicate.

27. In estimating possible rates of development in India, what they would involve in terms of effort required and what they would achieve, there are two or three major factors to be taken into account. We have already referred to the central role of capital accumulation in economic development, and how it can be stepped up by, so to say, ploughing back additions to national income. The proportion of the addition to the national income in each period which it is decided to plough back is thus one of the major determinants of the rate of development. But this proportion cannot itself be fixed in a given situation without reference to two other factors. These are (*a*) the rate of growth of population, and (*b*) the increase in national output and income likely to follow a given increase in the capital stock.

28. If population is growing at a certain rate, the total national output has to be raised at the same rate merely to maintain existing standards of income and consumption ; this means that not only will so much less of further additions to national income be available for ploughing back into investment but a part of what is ploughed back will be taken up by capital equipment required for maintaining *per capita* incomes constant in the following period. It is true that a growing population increases the manpower potential of the country and also has the effect, in some ways, of stimulating investment. It is also true that the effect of an increase in population cannot be judged solely in terms of the effect on *per capita* incomes; it affects the whole pattern of production and consumption. It is not possible to judge whether, on net, an increasing population is favourable or unfavourable to development. In the past, periods of rapid economic development have also been periods of rapidly increasing population, but whether there is any causal relationship between the two or how it works one cannot say with any certainty. In Britain, between the commencement of industrialisation and now—a period of about 180 years—population has increased roughly five-fold. Japan had by 1939 a population about twice as high as when it embarked on industrialisation. In periods of rapid development and changing techniques it is questionable whether the concept of an 'optimum' population can have any precise meaning. But in the short run—and we are concerned here primarily with the earlier critical stages of development—there is no doubt that, given a situation in which shortage of capital equipment rather than of labour is the main limiting factor in development, a rapidly growing population is apt to become more a source of embarrassment than of help to a programme for raising standards of living. In other words, the higher the rate of increase of population, the larger is likely to be the effort needed to raise *per capita* living standards.

29. The relationship between additions to capital stock and increases in national income is also one which by its nature, would vary with circumstances. There is no unique capital-output ratio applicable to all countries at all times. Much depends not only on the stage of economic development reached but also on the precise forms of further expansion. Japan provides the instance of a country where, in about a generation (*i. e.*, roughly between 1885 and

1915), labour productivity in agriculture was doubled with very little additions to capital equipment and mainly through the use of fertilisers, better seeds, improvements in water supply and pest control, etc. Though climatic and other differences might require larger investments to produce the same result under other conditions, the capital-output ratio is likely to prove favourable in most countries where agricultural yields are low and where they can be stepped up by relatively small improvements in technique and organization. Industrial development naturally requires more capital, but here too there are differences from country to country depending on the capital intensity of the industries concerned. Before the War, for instance, capital per occupied person in manufacturing industry was about three times as high in Canada as in Australia, while in the realtively more undeveloped countries of South Eastern Europe it was a quarter to a third less than even in Australia. As a rule, basic industries like iron and steel, heavy chemicals and power, and services like railways are more capital-intensive than others, and therefore, in the stages of industrial development where these are being built up, the capital-output ratio is likely to be less favourable than when more attention is being given to light consumer-goods industries. As development proceeds, external economies also become more evident, and this has the effect of reducing the amount of capital required per unit of output. The capital-output ratio also depends in a given period on the extent to which installed equipment in industry and transport is utilized ; if it is used more intensively, say by multiple shift working, the output as a proportion of the capital invested would naturally tend to be greater than otherwise. An outstanding case of a given capital stock yielding larger output was furnished by the United States when the exigencies of war required fuller employment and longer hours of work. Then, again, the likely increase in national income consequent on capital accumulation depends to a great extent on the share of residential buildings in the additions made to the capital stock. In the pre-war Five Year Plans of the Soviet Union, it would appear that the share of the new residential constructions in capital formation was relatively small ; this entailed austere standards in regard to housing, particularly in the urban areas, but it made possible a greater concentration of resources on industrial and agricultural development and, therefore, a more favourable capital-output ratio for the country as a whole. It must also be noted that the efficiency of investment depends upon a great many other factors besides the size of the investment.

30. It will be seen from the above that one can assume a capital-output ratio only in relation to the pattern of development visualized for a particular country, the capital stock already at its command, and the extent to which the available capital resources are being utilised. In some of the relatively more developed countries of the world, a unit increase in national income has apparently required, in the last few decades, something between 3 and 3½ times as much in terms of additions to capital stock ; in limited periods and in particular instances the ratio has of course varied. These relationships are subject to the various qualifications mentioned, but they indicate the range within which the capital-output ratio may fluctuate. In making any assumption about India for the future, we have to take into account several diverse factors, *e.g.* the possibility of raising yields in agriculture with relatively small additions to capital equipment, the need for expanding basic industries and services like irrigation and power which

are highly capital-intensive, the lack of technical skill which is likely to be reflected in lower productivity of labour in the initial stages, the scope for intensive use of equipment in at least some industries through full utilisation of capacity, shortage of housing in urban areas needing early attention, the 'external' economies likely to follow development of transport, power, marketing and credit, etc.

III. Investment, Income and Economic Development in India : A Broad Outline

31. For the purposes of our calculations regarding possible rates of developemnt in India in the next few decades, we have made by way of first approximation the following assumptions in regard to the three realtionships mentioned :

(*i*) population will continue to grow at the rate of about 1 1/4 per cent per annum (which is the rate recorded in the last decennial period) ;

(*ii*) a unit increase in national output and income will require about three times as much by way of additions to capital stock, and the increased output will materialize in the third year from the date of investment ; and

(*iii*) in regard to additional income in each period ploughed back into investment, there is scope for choosing the proportions according to the rate of development desired, the measure of austerity involved, and the organsational and institutional changes necessary.

On these assumptions, the alternatives in regard to investment targets can be set out in terms of the increases in national income that can be achieved and the repercussions that particular investment targets would have on consumption standards at each stage in the process of development.

32. The national income of India might be estimated as approximately Rs. 9,000 crores in 1950-51. Starting from this level, the calculations we have made indicate that national income can be raised by over 160 per cent in about twenty-two years, and *per capita* incomes doubled, if capital formation is stepped up from the beginning by as much as two-thirds of the additional income each year. Apart however from the organisational difficulties in stepping up investment at such a rapid rate, this rate of development would involve—particularly in the initial stages—considerable pressure on the resoures available to the community for consumption and in fact necessitate a reduction in *per capita* consumption standards for a period of 10 to 15 years. If, on the other hand, capital formation is raised more gradually, say, by 25 per cent of the additional income in each period, no significant fall in present consumption standards would be necessary, but the rate of growth of national output will be very much slower—in twenty-two years it will have gone up by hardly 80 per cent and *per capita* incomes even less; the rate of improvement in consumption standards will also be correspondingly low. We have therefore to think in terms of stepping up capital formation by somewhat less than two-thirds but by more than a quarter of the additions to national output in each successive period.

33. In the present Five Year Plan, capital formation is estimated to rise by about 20 per cent of the additional income each year. The internal resources thus generated by the process of development would be supplemented to some extent by external resources. By 1955-56, national income, it is estimated, will have gone up to about Rs. 10,000 crores, that is, by about 11 to 12 per cent above the estimated level for 1950-51. Proceeding from the level of Rs. 10,000 crores reached at the end of this five-year period, the graph attached shows the rate of progress in regard to national income and consumption standards that could be attained if, from 1956-57 onwards, investment is stepped up each year by an amount equal to 50 per cent of the additional output. This means that the rate of saving as a proportion of total national income will have to go up from 5 per cent in the base year 1950-51 and 6 3/4 per cent in 1955-56 to about 11 per cent by 1960-61, and 20 per cent by 1967-68. After 1968-69, though the resources devoted to investment will continue to go up in absolute terms, capital formation as a proportion of national income, it is assumed, will not be raised beyond 20 per cent of the national income. On these assumptions, it will be seen, *per capita* incomes can be doubled by about 1977, *i.e.*, in about twenty-seven years, and consumption standards raised by a little over 70 per cent over the 1950-51 level.

34. These calculations, it must be emphasised, are illustrative and are intended to indicate only broadly the implications, in terms of effort and return, of alternative courses of action. The projections of national income, investment and consumption are to be interpreted with due caution. For instance, a fair proportion of the investment required could be drawn from the beginning from unutilised manpower and other resources, and to this extent the attainment of the investment targets would not require a corresponding decrease in the resources available to the community for current consumption. There are a variety of ways in which idle manpower and the spare hours of those partially employed can be canalised into a nation-wide programme of developmental activity. In the digging of canals, repair and renovation of tanks, construction of roads, bridges, and bunds, in rural housing, in improvement of sanitation, in the imparting of elementary education and technical training, and in several other activities, there is scope for participation by all sections of the population. The problem is essentially one of organisation. We have stressed throughout this Report the need to mobilise resources for local works and have also made provision in the present Five Year Plan for assisting and initiating the process. As organisational deficiencies are made good, and supply of construction materials like cement, bricks and timber improve, the scope for direct utilisation of idle manpower for building up capital will undoubtedly widen. Thus, the targets of investment suggested might, in fact, prove less difficult to attain than would appear when stated in financial terms. Correspondingly, the pressure on consumption standards of a development effort of the order indicated might also turn out to be less than the estimates given above suggest.

35. Development effort, it must be emphasised here, is something more than investment defined in the technical sense of additions to capital equipment. When the levels of education and health are as low as they are in India today, measures designed to raise them—which might require only moderate amounts of capital equipment—would yield larger returns than many

forms of investment in the narrower sense of the term. The potentialities in this direction are immense. The scope for raising agricultural productivity in the country by relatively small outlays of money on agricultural extension services is an instance in point. Technical education and training, together with slight improvements in methods of production may have similarly the effect of increasing productivity substantially in small-scale industries. The doubling of national income in Japan between 1878 and 1912, referred to earlier, is perhaps explained more by factors of this nature than by high rates of investment as such. In other words, while it is important not to base our assessment of future possibilities on unduly optimistic assumptions, we should not ignore the scope for increasing productivity substantially in lines where they are now exceptionally low and thus achieve a more favourable capital output relation than 3 : 1 assumed in the calculations above.

36. It will be seen from the graph that the rate of increase of national income will tend to gather speed after the first 10 years or so by when capital formation per annum will have reached a level three to four times as high as in the base year 1950-51. If this order of increase in capital formation could be brought about earlier, either through direct utilisation, of idle manpower or by larger savings, the target of doubling *per capita* national income can be achieved earlier. In judging the feasibility of attaining high rates of investment and saving in India, it is also essential to bear in mind that only a little over 2 per cent of the national income is absorbed by defence expenditure. Considering the resources that some of the other countries had to divert to defence in periods of development—perhaps 10 per cent of the national income and often more—this must be regarded as a factor conducive to rapid development, provided conditions are favourable in the future for maintaining this relatively low proportion.

37. What has been said in qualification of investment estimates is also true by implication of the estimates regarding resources becoming available for consumption. As incomes increase, the whole pattern of consumption would change and so would individual and social valuations. In periods when the constituents of the national output are changing rapidly, the notion of a doubling of standards of living does not by itself convey any precise picture. Doubling *per capita* consumption does not, for instance, mean doubling of cereal consumption. A rising standard of life is likely, in fact, to result in reduced *per capita* consumption of cereals, and a substitution of other foods, such as fruits and vegetables, eggs, etc. Raising of nutritional standards has to be an important aspect of development in India, but improvement in these standards cannot be gauged solely with reference to any particular item or items within the food group. With extension of irrigation over large parts of the country, increasing use of fertilisers and better seeds, and the use of power for certain agricultural operations, a new pattern of intensive agriculture which provides a more complete and balanced diet may be expected to evolve. Rising standards of living will also be characterised by greater demand for the secondary essentials of life like education and health facilities, travel, entertainment, etc. A doubling of consumption standards is, therefore, more a question of planning for and meeting changes in the pattern of consumption and in social valuations than of doubling the production of its existing components.

38. In the calculations of investment and income given in the earlier paragraphs, it has been assumed, as a first approximation, that population will continue to grow over the next generation at the rate of 1¼ per cent per annum. This would mean that the population of the Indian Union at the end of 25 years from now would be of the order of 500 million. This assumption might or might not be legitimate. Trends in population growth cannot be altered quickly, and any reduction in birth rates may well be neutralised by a corresponding reduction in death rates. On the other hand, with family planning on a nation-wide scale, there is no reason why the rate of growth cannot be brought down to, say, about 1 per cent per annum or even lower. The pressure of population in India is already so high that a reduction in the rate of growth must be regarded as a major desideratum. To some extent, improvement in living standards and more wide-spread education, especially among women, will themselves tend to lower the rate. But positive measures are also necessary for inculcation of the need and techniques of family planning. Elsewhere in this Report we make recommendations in this regard.

39. In view of all these considerations, we regard the rate of development indicated in the graph as not only the minimum that the community will have to aim at over the next few quinquenniums but as something which must be exceeded. With planned conservation and utilisation of resources, it should be possible to double *per capita* incomes in 20 years or so. Doubling national income *per capita* in this period is by no means an overambitious target. Yet the scale of effort that it calls for will be obvious from the broad calculations set forth above. This scale of effort can be secured only through organisational and institutional changes affecting several aspects of economic and social life, and beginnings in this direction have to be made even during the period of the First Five Year Plan.

IV. Employment in Relation to Development

40. There are one or two problems of particular importance and interest in the earlier stages of development to which we would like to refer briefly at this stage. The first is the problem of employment. In a country with vast reserves of unutilised manpower, the problem of employment has two aspects in relation to development. There is, in the first place, the need to make the maximum use of idle labour for the purpose of development. Here it is not so much a question of providing employment at existing or higher real wages but rather one of effectively mobilising all the available resources at minimum social cost. The second aspect of the problem is that of increasing the productivity of labour so that larger employment can be provided at rising levels of real income. This is obviously linked to the whole question of capital accumulation and technical efficiency to which we have already referred. There may be, in the initial stages, an apparent conflict between the need for making the maximum use of idle manpower and the need for raising productivity, but it is essential to recognise that, over a period, progress in one is apt to be checked by insufficient progress in regard to the other. In the initial stages of development, newly mobilised labour will not be able to contribute significantly to total output and, therefore, larger money incomes will tend to exert pressure

on available supplies and cause sectional rises in prices. This process is apt to cause a redistribution of available supplies leading probably to a rise in the real incomes of those newly employed and a fall in the real incomes of those who were already employed. To some extent such redistribution may be necessary and desirable, but there are obviously limits to this, particularly as the pressure is likely to be felt on commodities like foodgrains. In promoting higher levels of employment, it is necessary, therefore, to see that the newly mobilised labour is able to raise total output. If productivity of labour cannot be increased in the short run, and particularly if the availability of basic essentials like foodgrains cannot be increased, a programme of full employment, designed primarily to put to work all idle labour, runs the risk of breaking down on account of excessive pressure of money incomes on available supplies. It is for this reason that we emphasise throughout this report the need for relying as far as possible on voluntary labour, and using money mainly as a means of attracting and organising such labour. In other words, the accent in these first few years of development has to be on mobilisation of idle manpower, with as little increase in money incomes as possible, rather than on full employment as such which, to have any meaning, should be able to provide higher money as well as real incomes all round.

41. A programme of full employment, with assurance of at least the current level of real wages to the newly employed and with no reduction in the real wages of those already employed, can get into swing only as capital formation in the community goes up. During the period of the present Five Year Plan, considerable progress will have been made in expanding irrigation, power, basic industries, transport and other services and these will provide, directly as well as indirectly, new avenues of employment. After the five year period, the pattern of priorities may to some extent change, but since aggregate investment will be continually stepped up, employment opportunities will expand rapidly. Through progressive increase in irrigation facilities, the scope for double-cropping will be enlarged and seasonal unemployment will diminish. Rural electrification will open up prospects for the establishment not only of large scale but also of cottage and small scale industries. As commodity production goes up, the scope for employment in services will also grow. There is at present a large measure of disguised unemployment in the spheres of services ; the tendency at first will be to eliminate this element of unemployment, but gradually the proportion of the total working force engaged in services will also begin to rise. The elimination of unemployment in an under developed economy is by its nature a somewhat long-term problem which calls for steady and persistent effort. In fact, development is, in a sense, but another name for employment opportunities. The larger the increase in national output aimed at, the greater must be the demand for labour, especially if care is taken to adopt labour-intensive processes to the maximum extent possible. This means that expansion of employment opportunities at rising levels of real income will proceed side by side with the development of the economy and, like the process of development itself, will become cumulative as soon as there is a marked improvement in the technical equipment of the community.

42. In the interim period there are likely to be difficulties of adjustment. In some cases, there might appear a certain conflict between the need to reduce the social cost of maintaining unemployed labour and the need to raise the productivity of labour. To some extent,

mobilisation of idle manpower for the development programme will generate new money incomes, divert larger quantities of essential commodities like foodgrains into the hands of those with the additional purchasing power, and thus create problems for those whose incomes remain more or less fixed. In the nature of things there cannot be clear-cut solutions to these difficulties. Unemployment is not merely an economic problem, it is a social problem involving human values and has to be approached from a broader view-point. In framing employment policy in relation to development, the following criteria need to be kept in mind : (*a*) unemployed manpower should be drawn upon to the maximum for the development programme ; (*b*) money incomes in the initial stages should be expanded as little as possible ; (*c*) capital formation should be speeded up and technical efficiency improved so as to increase productivity of labour ; (*d*) the rate at which equipment in established indigenous industries, especially those which employ large numbers, is allowed to be competed out and discarded must be adjusted so as to safeguard against excessive unemployment in the process of technological change ; and, lastly, (*e*) the distribution of capital in new lines should be planned keeping in view the need to increase employment opportunities in the short run as well as the larger pattern of development necessary for an expanding economy.

43. A comprehensive development programme over a period of years along the lines outlined above will bring about a significant change in the occupational pattern of the country. At the rates of investment indicated it will become possible to divert, in stages, an increasing proportion of the annual increase in population to non-agricultural occupations. In a country in which even a moderate percentage increase in population means a large total to be found employment, the change in the over-all occupational pattern is likely to be slow at first. At the present rate of growth of population, the working force in the country goes up every year by about 1·8 million per annum. On an average, factory industries like cotton textiles, sugar and cement would seem to require per worker capital equipment costing (at current prices) anything between Rs. 3,000 and Rs. 8,000. Heavy industries like iron and steel, fertilisers and petroleum would probably involve capital investment of the order of Rs. 100,000 or more per employed person. Industries like ship-building, locomotive manufacturing, etc. are also highly capital-intensive. It will be seen from this that the possibilities of increasing employment in large-scale manufacturing industries directly are limited, especially when the emphasis has to be on expanding producer-goods industries. For absorbing all, or a large proportion, of the increase in working population each year in non-agricultural occupations, reliance will have to be placed mainly on small scale and cottage industries involving comparatively small capital investment. If these industries are to afford employment at reasonable rates of wages, their technical efficiency will have to be increased and every effort will have to be made to see that the producer's reward is not intercepted by middlemen. The scope for developing and expanding these industries will increase further with the development of power, communications and other ancillary facilities. Once the disguised unemployment in the tertiary sector (*i. e.*, in services) is eliminated, every increase in commodity production—particularly in manufacturing industries—will lead to the absorption of a considerable part of the additional working force in transport, trade and other services. But, again, the stage when expansion of services requiring less capital would absorb a growing population of the working force is likely

to come fairly late in the country's development. In the immediate future, therefore, attention has to be concentrated primarily on diverting the increases in working population to large and small-scale industries and the supporting services rather than on changing in any drastic way the over-all occupational pattern. The change in occupational pattern will no doubt follow—perhaps faster than can be foreseen now—but this is not an end itself and should be regarded more as a corollary of development rather than as a direct objective.

V. External Resources for Development

44. Another problem to which we would refer is the role of foreign investment in relation to development. How much of the resources needed to raise national output and incomes should come from domestic effort and how much should come from external sources cannot, of course, be determined in advance or on any a priori basis. Very much depends upon the circumstances in which a country is placed and upon the general conditions affecting the flow of capital from surplus countries. The United States, for instance, relied a great deal in the initial stages of its development on foreign capital. This is probably explained by the shortage of manpower and the consequent heavy capital investment required for opening up the continent ; partly also it was conditioned by the policy of protection followed in the United States and the free movement of capital between countries which characterised the nineteenth century. On the other hand, Japan depended very little on external resources ; the State played an active part in financing industrial development and introducing new forms of organisation needed for industrialisation. The Soviet Union provides another instance of a country which developed rapidly with its own resources ; in this case it meant even greater hardship and suffering than in Japan. That a plan of development today must, in the main, rely on domestic resources can hardly be over-emphasised. In the first place, the conditions governing international investment are no longer what they were when some of the highly industrialised countries of today like the United States, Australia and Canada began their career of development. Secondly, external assistance is acceptable only if it carries with it no conditions explicit or implicit, which might affect even remotely the country's ability to take an independent line in international affairs. There are also obvious risks in excessive reliance on foreign aid which depends on the domestic political situation in lending countries and which might be interrupted by any untoward international developments. And yet, external resources at strategic points and stages can be of so much assistance in a period of rapid development that it is desirable, consistently with other objectives, to create conditions favourable to their inflow.

45. Priority will no doubt go to such external investment as is available from institutions organised on an international basis. The resources of such institutions are however limited, and it would be short-sighted to exclude without good reason investment of funds from advanced countries, either on an inter-governmental basis or on the basis of negotiations between individuals or corporations in the countries concerned. The terms and conditions on which foreign investment may be received will of course have to be judged in the light of the basic objectives of national policy and also in the light of the contribution which the proposed investment will make to development along lines accorded a high priority in the country's development programme.

46. As will be seen from subsequent chapters, India has a programme of development larger than can be financed from the resources internally available. To a certain extent, the volume of domestic resources available for investment can be augmented through appropriate fiscal and economic policy, through compulsory savings, and through drawing on unutilised manpower. There will, however, still remain certain shortages which would tend to restrain the whole pace of development, and it is in meeting these that external resources can be of help. The precise role of external resources in relation to the first Five Year Plan is discussed in a later chapter.

CHAPTER II

OBJECTIVES, TECHNIQUES AND PRIORITIES IN PLANNING

In defining the objectives, priorities and techniques of planning in India, it is necessary to bear in mind the scale and dimensions of the problem as outlined in the preceding chapter as well as the basic values which must find expression in the economic and social pattern to be evolved. It is no longer possible to think of development as a process merely of increasing the available supplies of material goods ; it is necessary to ensure that simultaneously a steady advance is made towards the realisation of wider objectives such as full employment and the removal of economic inequalities. Maximum production, full employment, the attainment of economic equality and social justice which constitute the accepted objectives of planning under present-day conditions are not really so many different ideas but a series of related aims which the country must work for. None of these objectives can be pursued to the exclusion of others ; a plan of development must place balanced emphasis on all of these. For instance, even the limited objective of increased production cannot be attained unless the wider objectives of social policy are constantly kept in mind and steadily pursued. On the other hand, equality and social justice will have little content unless the production potential of the community is substantially raised. Development, thus conceived, is a process which calls for effort and sacrifice on the part of the entire body of citizens. For such effort and sacrifice to come forth psychological conditions have to be created which provide an incentive for all to give of their best.

Institutional and Structural Factors in Development

2. Reference has been made in the previous chapter to the limited and partial development which the Indian economy has registered during the last few decades. Judged in terms of per capita incomes and standards of well-being, the economy has, on the whole, remained more or less stagnant. This is primarily because the basic conditions under which an economy can continuously expand have been lacking. The impact of modern industrialism in the latter half of the 19th century was felt in this country initially through imports of machine-made goods from abroad which reacted adversely on the traditional patterns of economic life, but did not create the impulse for development along new lines. The transition that followed was characterised not by expansion of industry and a diversification of the economic structure but by a decay of India's traditional arts, crafts and industries, and by an increasing pressure of population on the land. This retrogression led to a decline in productivity per person engaged in agriculture, the adverse effects of which were perhaps softened to some extent by the shock-absorbing capacity of the old institution of the joint family. The result was a continuous increase in under-employment and the growth of an attitude of "pathetic contentment" on

the part of the people. In such an environment there could be little economic or social progress. Whatever surpluses might have been available in the system under these conditions were directed to the purchase of imports, partly of better finished products from abroad and partly of equipment for the new transportation system designed primarily in the interests of foreign commerce. The responsibility for promoting modern commerce and industry came to be concentrated in the hands of certain classes in the urban areas, and up to the end of the nineteenth century the only major large-scale industries which had taken root in the country were cotton and jute textiles. Little attention was paid to improvement of agriculture or to the needs of the rural areas. After the turn of the century and especially after World War I, it came to be recognised that without rapid industrialisation significant economic advance was not possible. The inter-war period witnessed the establishment and growth of several industries in the country. A more positive policy on the part of the Government and a change in the terms of trade in favour of the producers of manufactured goods and against the primary producer in the period of the depression materially assisted capital formation in the industrial sector. There was, however, little overall economic improvement as conditions in the agricultural sector deteriorated sharply.

3. The backwardness of the Indian economy is reflected in its unbalanced occupational structure. About 68 per cent of the working population is engaged in agriculture, about 14 per cent in industry (large and small scale), some 8 per cent in trade and transport and the remaining 10 per cent in professions and services including domestic service. Even with this large proportion of the population engaged in agriculture, the country is not self-sufficient in food and raw materials for industry. Productivity per worker in organised industry, commerce and transport is about three times that in agriculture, but this sector of the economy has not been expanding rapidly enough to absorb the surplus population on the land. The large-scale underemployment in the rural areas which these conditions have given rise to constitutes a big economic and social problem. A change in the occupational pattern in the direction of greater employment in the industrial sector and in services is clearly necessary if the associated phenomena of mass poverty and unemployment are to be tackled effectively.

4. It follows from all this that the problem is not merely one of making the existing economic institutions work more efficiently, or making small adjustments in them. What is needed is a transformation of the system so as to secure greater efficiency as well as equality and justice. The central objective of planning is to create conditions in which living standards are reasonably high and all citizens, men and women have full and equal opportunity for growth and service. We have not only to build up a big productive machine—though this is no doubt a necessary condition of development—we have at the same time to improve health, sanitation and education and create social conditions for vigorous cultural advance. Planning must mean coordinated development in all these fields.

5. In this task of securing simultaneous advance along several fronts, it would be unrealistic to hold out the hope that rapid and spectacular progress can be made in the initial period of planning. Within a limited period, there is always a measure of conflict between

one objective and another and, in the formulation of a Plan for a given period, it is necessary to proceed in terms of priorities as between these objectives themselves laying more stress on some and less on others. This problem of balancing competing objectives is implicit in all planning and the quality of a plan depends upon the soundness of its judgments regarding the relative emphasis on the various objectives. Only to the extent that the Plan succeeds in striking a right balance can consistent policies be formulated and pursued. There is, to begin with, the problem of choosing, on the one hand, between a moderate increase in the standard of life in the near future with relatively small additions to capital equipment and, on the other, a substantially higher standard of life perhaps for the next generation at the cost of continued austerity and privation to the present generation in the interests of rapid capital formation. The implications of this choice have already been discussed in the previous chapter.

6. Secondly, while a fuller utilisation of the idle manpower in the country must be a major objective, and every effort must be made to create opportunities for work in the rural areas through improvements in agriculture, development of cottage and small-scale industries and extensive programmes of public works, especially in the slack season, the lack of the necessary equipment and other materials needed for improving labour productivity limits the rate at which idle manpower can be absorbed. There is, under these conditions, the risk of creating or perpetuating pseudo-employment, which might result in a rise in money incomes without a corresponding increase in the supply of the goods needed for sustaining the newly employed. The problem, as has been shown earlier, cannot be solved satisfactorily without a substantial increase in the productive equipment of the community, which, in turn, means more investment. While planning for fuller employment, it is also necessary to keep in mind the distinction between a pattern of employment which can be sustained after the development process has gone some way and a pattern that has to serve for the transitional stage. Rigidity of the occupational pattern is incompatible with rapid economic development. Steps must, undoubtedly, be taken to ensure the fullest possible utilisation, in furtherance of development programmes, of labour power now running to waste, but the long-run objective must be to encourage rather than discourage the mobility of labour, geographical and occupational.

7. The problem of unemployment among the educated middle classes in the urban areas is an instance of a failure of coordination between the system of education and the needs of the economic system. As a proportion of the total population, the number of educated men and women in the country is very small, and there is dearth of trained personnel of the requisite quality in business and industry as well as in public administration. Unemployment among the educated classes is to some extent a consequence of the excessive bias in the present educational system towards general literary education to the neglect of specialised, technical and vocational training. To some extent, the difficulties experienced by educated young men in finding employment are traceable to a certain reluctance on their part to take on occupations which involve hard manual work or work in somewhat uncongenial surroundings either in cities or in rural areas. The problem has many facets. Unemployment amongst highly qualified and trained personnel may, to some extent, be frictional or transitional in character, but it may also be due to a lack of adjustment between demand and supply of such specialised

personnel. Employment exchanges, closer contacts between educational institutions and employers, private or government, and other devices to encourage a better adjustment between demand and supply can alleviate the problem of middle class unemployment upto a point. But a large and continued increase in the demand for educated men and women can come only from a quickened tempo of development in the economy. As planning proceeds, there will be demands for personnel with various types of qualifications and training and meanwhile it is necessary to take steps to diversify and reorientate the educational system in keeping with the needs of a developing economy.

8. The decisions that have to be taken in regard to the reduction of economic inequalities within a given period also involve a weighing of diverse considerations. While it would be wrong in this sphere to think in static terms and to condone the existence or accentuation of sectional privileges, it is no less important to ensure a continuity of development without which, in fact, whatever measures, fiscal or other, might be adopted for promoting economic equality might only end up in dislocating production and even jeopardizing the prospects of ordered growth.

9. There are risks in going too far or too fast in these matters, but the risks of not moving fast enough are no less serious. The decision as to the measure of risk to be undertaken must turn primarily on an appraisal of the capacity of the community to hold together under the stress of major structural changes and of its various sections to maintain a high standard of discipline and restraint while the necessary adjustments are taking place.

Democratic Planning and the Role of the State

10. The question of the techniques to be adopted for planning is linked up with the basic approach that a community decides to adopt for the realisation of its objectives. It is possible to have a plan based on regimentation and on immediate measures for levelling down in the hope ultimately of being able to level up. It is possible to take the view that mass enthusiasm cannot be created except on the basis of reprisals against those classes which have come to be associated in the public mind with the inequities and deficiencies of the old order. But the basic premise of democratic planning is that society can develop as an integral whole and that the position which particular classes occupy at any given time—a product of various historical forces for which no individual or class as such can be held responsible—can be altered without reliance on class hatreds or the use of violence. The need is to secure that the change is effected quickly and it is the positive duty of the State to promote this through all the measures at its command. The success of such planning no doubt depends on the classes in positions of power and privilege respecting the democratic system and appreciating the rapid changes it calls for.

11. It is clear that in the transformation of the economy that is called for the State will have to play the crucial role. Whether one thinks of the problem of capital formation or of the introduction of new techniques or of the extension of social services or of the over-all

re-alignment of the productive forces and class relationships within society, one comes inevitably to the conclusion that a rapid expansion of the economic and social responsibilities of the State will alone be capable of satisfying the legitimate expectations of the people. This need not involve complete nationalisation of the means of production or elimination of private agencies in agriculture or business and industry. It does mean, however, a progressive widening of the public sector and a re-orientation of the private sector to the needs of a planned economy.

Relative Shares of the Public and Private Sectors in Ownership of Productive Capital

12. We should like to emphasise here that, as far as the ownership of productive capital assets (other than in agriculture, small-scale industry and transport, and in residential housing) is concerned, the share of the public sector is already large. The book value of gross fixed assets owned by the Central and State Governments, together with the working capital in the enterprises concerned, amounted to over Rs. 1,200 crores at the end of 1950-51 (as compared to about Rs. 875 crores at the end of 1947-48). The distribution of these was roughly as follows :—

	(Rs. crores)
Railways	837
Irrigation works (including multi-purpose river valley projects)	230
Communications and broadcasting	53
Electricity undertakings	40
Industries	44
Civil Aviation	10
Ports	8
Central Tractor Organisation	5
TOTAL	1236

The above estimate excludes the investment in motor transport. Strictly speaking, account should also be taken of the productive capital assets owned by port trusts, municipalities and other semi-public agencies which probably amounted to well over Rs. 1000 crores.

13. The value of productive capital assets in the private sector (again excluding agriculture, small-scale industry and transport, and residential housing) in 1950 was not perhaps more than about Rs. 1500 crores. According to the Census of Manufactures for 1949 the net productive capital employed in twenty-nine groups of factory industries amounted to only about Rs. 510 crores ; for the factory industries not covered by the Census, as well as to allow for depreciation (so as to make the estimates comparable with those for the public sector which give the gross value), an additional provision of Rs. 600 crores might be made. The break down of the estimate of the value of total productive capital in the private sector, referred to above, would thus roughly be as follows :—

	(Rs. crores)
Factory establishments	1110
Plantations	100
Electricity undertakings	70
Mines	30
Shipping and Aviation	32
Motor transport	130
TOTAL	1472

14. These estimates are necessarily rough, and relate to historical and not replacement value, which will be considerably higher in both cases, but they show that in the building up and maintenance of basic services essential for organised industry, and to some extent in industrial development itself, the State has already been playing a not insignificant part. It also suggests that the productive capital in industry and in services essential to it is so small compared to the needs of the country that, in the further accumulation of it, the two sectors can well supplement each other and need not necessarily expand at the expense of the one or the other.

Relations Between the Public and the Private Sector

15. In the industrial sphere, the respective roles of the State and of private enterprise have been enunciated in the Industrial Policy Statement of 1948. In terms of this Resolution, the principle of Government ownership and control has been accepted in regard to a segment of the economy comprising arms and ammunition, atomic energy and railways. It has also been stated that in regard to certain key industries like coal, iron and steel, aircraft manufacture, ship-building, manufacture of telephone, telegraph and wireless apparatus, etc., the State is to be responsible for further expansion except to the extent that it considers the cooperation of private enterprise necessary for the purpose. In the rest of the industrial field the initiative for development and the responsibility for management will rest on private enterprise. Government have, however, the right to acquire any undertaking in the public interest and to intervene in cases where the conduct of industry under private enterprise is not satisfactory.

16. The distinction between the public and the private sector is, it will be observed, one of relative emphasis ; private enterprise should have a public purpose and there is no such thing under present conditions as completely unregulated and free private enterprise. Private enterprise functions within the conditions created largely by the State. Apart from the general protection that the State gives by way of the maintenance of law and order and the preservation of the sanctity of contracts, there are various devices by which private enterprise derives support from the Government through general or special assistance by way of tariffs, fiscal concessions, and other direct assistance, the incidence of which is on the community at large. In fact, as the experience of recent years has shown, major extensions of private enterprise can rarely be undertaken except through the assistance of the State in one form or another. The concept of private enterprise, as, indeed, of private property, is undergoing rapid change, and the view that private enterprise can function only on the basis of unregulated profits is already an anachronism. The process of reorientation should and is certain to continue and gather speed, and the problem is to see that the transition is smooth and orderly. Already, in certain spheres of industry, units owned publicly and units under private enterprise are functioning side by side. The points of interaction between private and public enterprise are multiplying rapidly. In the maintenance of industrial peace and the promotion of a cooperative outlook between capital and labour, the State has necessarily to play a vital role. All these are indications that the private and the public sectors cannot be looked upon as anything like two separate entities ; they are and must function as parts of a single organism.

17. Agriculture is traditionally a sphere in which the organisation of economic activity centres around the individual, backed by the cooperation of the members of the family. In a static subsistence economy this form of organisation was probably adequate to the limited purposes then in view. Under modern conditions, it is proving more and more inadequate. Here, again, whether we regard agriculture—and associated industries—as falling within the private sector or the public sector is more a matter of nomenclature than of substance ; for it is almost impossible to secure the desired development in these fields without a great deal of initiative and active assistance on the part of the State. Not only must the State assume the responsibility for providing the basic services such as irrigation, power, roads and communications ; it must also undertake direct promotional work by providing finance, marketing, technical advice and other assistance to agriculture through appropriate agencies. If the State undertakes these responsibilites, this will mean certain obligations which the agriculturist will have to undertake.

18. For the State to be in a position to discharge efficiently the varied responsibilities that it undertakes, it is necessary that all producers, agricultural as well as non-agricultural, accept certain obligations. For instance, since the State has to guarantee a fair distribution of the limited supplies of food, the farming community has to make available to it on reasonable terms the necessary supplies for distribution to non-producers. For similar reasons controls might be necessary on essential consumer goods like cloth and basic producer goods like steel. In a planned economy, thus, the private producer has to work, in essence, as an agent for utilising economically and to the best advantage of the community the productive resources at his disposal.

Organisational Aspects of Economic Change

19. Our conception of the public and the private sectors and the direction in which they ought to move is closely related to the problem of competing objectives we referred to earlier. This problem arises in an acute form in the early stages of planning mainly on account of deficiencies in organisation. The necessity for making a choice between reducing inequalities of income and raising the level of capital formation would not, for instance, be so serious if there were available at hand alternative channels for efficient mobilisation of resources. The limitations to a policy of full employment are similarly to a great extent on account of deficiencies in organisation in regard, on the one hand, to the supply and distribution of essential commodities, and, on the other, to the possibilities of directly mobilising manpower. The institutional changes that are now initiated have to be framed with two aims in view : first, to progress as far as possible even within the period of the Plan towards the social objectives in view, and, second, to remove deficiencies in organisation which will make possible faster progress in the future.

20. In a country which is primarily agricultural and in which the pace of development in other sectors depends to a great extent on progress in agriculture, the system of ownership and management of land within which agricultural producers have to function is obviously of the highest significance. Large areas of the country have emerged only recently from forms

of feudal organisation. Though a fair measure of progress has been made in protecting the cultivator against intermediaries in land, money-lenders and traders, a great deal has still to be done in order to enable the cultivators to function as an efficient agent of production in command of a reasonable size of holding and with access to productive credit and other facilities such as supply of seeds and manures. The question of ownership of land has also a wider social aspect which makes the reorganisation of the agrarian system a matter of prime national importance. Our detailed recommendations in respect of land policy to be followed in the period of the Plan have been set forth later in this Report. The organisational changes necessary in this sector do not relate merely to land ownership but cover a wider field including agricultural marketing and rural credit. The problem here is one of making a simultaneous advance along several lines and this, as we have emphasised elsewhere, involves a strengthening of the co-operative form of organisation for purposes of marketing, credit and production.

21. In the development of countries like the United Kingdom, trade and banking played a great part in mobilising resources for development. Mercantile profits, in fact, were the main source of funds for industrial expansion, while the growth of commercial banks provided the necessary working capital. Apart from the fact that there were special historical circumstances which favoured the accumulation of large profits from commerce in the initial stages of economic development in many of these countries, these means of promoting capital formation are not consistent with our other objectives. The expansion of trade has, under our conditions, to be regarded as ancillary to agricultural and industrial development rather than as an initiating impulse in itself. In fact, in view of the urgent needs for investment in basic development, diversion of investment on any large scale to trade must be viewed as a misdirection of resources. Similarly, banking development and provision of credit facilities in an under-developed country raise special problems. To these we shall return presently.

22. The distributive system needs special attention under planning. In an economy subsisting on small commodity surpluses scattered widely, there is a tendency for capital to flow into trade in preference to production. Apart from the opportunities which a loosely-knit economic organisation gives for small trading establishments to spread themselves over extended lines of distribution, investment of capital in speculative trade gives better returns than in almost any other sector. The former may be regarded as another manifestation of under-employment but the latter is apt to become an obstacle to development. From the larger point of view of controlling relative prices and profitability as also for gaining control over the economy at strategic points, state trading at the wholesale level in respect of selected commodities could be used as a potent instrument of planning. In a system in which profits from production are closely linked to marketability of the product government operation of the distributive system at selected points is, *prima facie*, capable of producing even better results than direct control over production. The cost of living of the large majority of the people depends, for instance, on a relatively few commodities like foodgrains, cloth, sugar, kerosene and salt. Through state trading in these commodities, it would be possible to operate directly on the cost of living and to aim at a rate of development which would otherwise be difficult. Public enterprise in the field of distributive trades, is however, likely

to raise complex organisational problems. Our knowledge of the present distributive mechanism, its composition and structure and the way the various links in the system are related is at present inadequate, and it is therefore difficult to visualise fully the administrative problems involved. But the direction in which we have to move is clear, and a beginning has to be made during the period of the Plan. Before decisions can be taken, there is need for clearing up the factual position regarding the amount of capital involved, the profit margins, costs of operation, the number of people employed, and related aspects of the question. A Census of Distribution designed to throw light on these crucial aspects and covering a few selected commodities in the first instance would be of value in this context.

23. The limitations and deficiencies of organisational structure from the point of view of economic change can be made good, not necessarily by displacing private agencies but through supplementing them. Our conception of the private sector comprises not only individual and corporate but also co-operative forms of organisation with special emphasis on the last. It includes the vast fields of primary production, of cottage and small scale industries, of marketing of agricultural produce, of residential housing and of wholesale and retail trade in which there is scope for rapid expansion of cooperative enterprise. The extension of the cooperative form of organisation to these varied activities has hardly been initiated in this country, but it appears certain that such extension holds out promise of securing the best results by way of increased production, the reduction of rent and profit margins, and the building up of investible surpluses in the economy. If planning is to avoid excessive centralisation and bureaucratic control and is, at the same time, to hold in check the self-centered, acquisitive instincts of the individual producer or trader working for himself, the encouragement of cooperative enterprise must be given the highest priority. We should like to stress in particular the importance we attach to the progressive socialisation of agricultural marketing and of processing industries in the rural areas through the agency of cooperatives. The problems arising in this connection and the ways and means by which the State is to foster such development are referred to in appropriate contexts in the later chapters of this Report.

Allocation of Resources and Price Policy

24. The *raison d'etre* of a planned economy is the fullest mobilisation of available resources and their allocation so as to secure optimum results. The problem of how this has to be brought about when the economy functions partly through private enterprise motivated by profit expectations and partly through Government ownership and direction deserves careful consideration. For the private sector, the prevailing price relationships are the prime factor in determining resource allocations. In the public sector, the direction of investment need not always and necessarily be guided by the profit-and-loss calculus. Nevertheless, the relation between costs and returns even in the public sector has to be judged, at least as a first approximation, in terms of market prices. It follows that the maintenance of a structure of prices which brings about an allocation of resources in conformity with the targets defined in the Plan must be the consistent aim of economic policy.

25. Over a longer period, and particularly in a period of rapid development, the structure of prices is bound to change. Even the level of prices is likely to go up. But such changes must as far as possible keep in step with improvement in the level of incomes as well as with shifts in their distribution ; if they move in advance, they are likely to cause considerable hardships and lead to results which are the negation of our objectives.

26. Price policy, being partly a problem of allocation of resources and partly a question of ensuring reasonable equality of sacrifice among the different sections of the people, requires financial as well as physical controls. In the early stages, a development plan necessarily increases money incomes more rapidly than production. If these incomes are allowed to raise current consumption expenditures, they act immediately on prices, especially of articles like food which are in short supply. Such price inflation distorts the relationship between sectional price levels and encourages a diversion of productive resources to purposes which militate against the requirements of development. If continued for a long time, it generates economic instability and social unrest. To the extent that idle manpower and other resources can be used productively without any significant generation of additional money incomes, the inflation potential of a development programme can be minimised at the very start. But, to the extent that money incomes rise, the problem of holding inflationary pressures in check has to be faced.

27. Monetary and credit policy is a powerful instrument for securing the desired result. During the war and in the years immediately following, credit policy as an instrument of over all economic control had fallen into the background, but in recent years there has been a general tendency to revive its use. That credit control can exercise a healthy restraining influence on speculation and can assist in bringing about a better balance between aggregate demand and aggregate supply has been demonstrated by the distinct improvement in the price situation in the country since the raising of the bank rate and the adoption of a tighter credit policy by the Reserve Bank in November, 1951. The downward trend in prices in India had started before the announcement of this new policy, and it is evident that international factors have also greatly influenced the course of domestic prices. Nevertheless the credit and financial policy of the Government have been a significant factor in the situation. About the middle of 1951, the index of wholesale prices was around 450 ; it went down to 367 in May, 1952, and has, of late, been around 390. The cost-of-living indices have not shown a comparable fall, and it cannot be said that the fall in wholesale prices warrants any relaxation of vigilance and caution in the matter of overall price policy. Effective credit control must therefore remain an essential instrument for regulation of investment and business activity.

Working Capital Requirements and Organisation of the Credit System

28. Having emphasized the role of credit policy in keeping the economy on an even level we should like to refer also to another, somewhat different and more long-range, aspect of the matter in relation to developmental planning. A persistent upward trend in production and trade cannot be sustained without an expansion in the supply of money and credit. Over a

period, therefore, it will be found necessary to expand money supply in the country in response to the increased volume of transactions in the economy. This must come about through extension of credit institutions which will impart the necessary elasticity to money supply without generating inflationary pressures. The large credit needs of agriculture and of industry, especially of cottage and small scale industries, cannot be met except through a network of credit institutions which will mobilise savings in the rural areas and disburse credit on a large scale to productive enterprises, individual, cooperative or joint-stock. In this process of development, the encouragement of larger savings from current income and of a productive use of them in place of mere hoarding will have to play the major part. But, at the same time, judicious credit creation somewhat in anticipation of the increase in production and the availability of genuine savings has also a part to play, for it is conceivable that without this kind of an initial push, the upward process may not start at all or may fail to gather momentum. The overall credit policy to be followed by the central bank in an under developed country launching upon a process of development has, therefore, to be adapted to these requirements.

29. There is no doubt that the Reserve Bank of India, which is a nationalised institution, will play its appropriate part in furthering economic development along agreed lines. The Bank has succeeded in bringing the organised sector of the money market well under its control. It has recently initiated measures for the development of a bill market in India which will impart greater elasticity to the credit system. The Bank is also playing a more active role in the provision of rural finance and is devoting special attention to the problem of promoting banking development in parts of the country in which it has hitherto been lacking. These developments will strengthen the credit system materially. Under the Banking Companies Act, the Reserve Bank has wide powers for regulation and supervision of the credit policy of banks. More than these legal powers, it is, we feel, the moral prestige of the Reserve Bank and the close understanding between its management and the management of private banks that is of special importance in the alignment of the banking system to the needs of a planned economy.

30. The process of economic development, once started, will make new demands on the banking system, and this may necessitate changes in organisation and structure. Central banking in a planned economy can hardly be confined to the regulation of the overall supply of credit or to a somewhat negative regulation of the flow of bank credit. It would have to take on a direct and active role, firstly, in creating or helping to create the machinery needed for financing developmental activities all over the country and, secondly, in ensuring that the finance available flows in the directions intended. For the successful fulfilment of the Plan it may become necessary to direct special credit facilities to certain lines of high priority. Banking development, through the normal incentives of private banking, is apt to be a slow process, particularly in a country in which deposit banking and the use of cheques is likely to take root only slowly among the masses of the people.* In this field, the profit motive may stand

*Since the profit earnings of banks are related to the ratio between their cash holdings and their loans and advances, there is an inherent bias in favour of sections of the population who are familiar with the use of cheques and will enable a reasonably high proportion of loans and advances to be maintained on the same cash base. On account of this, the motive-force behind extension of banking to less developed areas also tends to be in the first instance collection of deposits rather than distribution of credit for productive purposes. Where there is a fairly significant supply of pre-existing savings to be tapped, this process will soon lead to the normal cumulative growth of bank deposits and bank credit; in backward areas, however, the initial start may have to be given through a more active loans policy in respect of productive credit.

in the way of the extension of credit facilities to sections of the population which need them for rapid development. The proper discharge of its functions by the banking system will necessitate its operation more and more in the light of the priorities for development indicated in the Plan and less and less in terms of returns on capital. The banking system—and in fact the whole mechanism of finance including insurance, the stock exchanges and other institutions concerned with investment—will thus have to be fitted increasingly into the scheme of development visualised for the economy as a whole ; for, it is only thus that the process of mobilising savings and of utilising them to the best advantage becomes socially purposive.

Fiscal Policy as an Instrument of Planning

31. Allied to the problem of credit policy is the question of fiscal policy in relation to planning. With the continuous expansion of Government functions and the increase in public expenditure this necessitates, fiscal policy may be said to be of even greater significance for influencing the volume and direction of economic activity. In the U. K., for instance, Government's total expenditure amounts to about 40 per cent of aggregate national expenditure ; in the U. S. A. and in Canada, it works out at about 25 per cent ; and, in Australia it is about 30 per cent. These high proportions are, of course, a reflection of the large transfers from the public to the private sector through social insurance schemes and servicing of public debt. In India, the corresponding figure is at present of the order of 7 or 8 per cent, and this will inevitably rise rapidly as development proceeds. The process of development has always inflationary possibilities, and it is necessary, if development is to be orderly and its incidence not unfair to those classes whose incomes are relatively fixed, that the accent of fiscal policy must throughout be on minimising inflationary pressures.

32. This vital consideration has been given due weight in determining the over-all target of development expenditure in the first Five Year Plan. At this level of expenditure, it has not been possible to provide finance for several projects which, on a longer view, must be taken up for execution. There is , of course, no way of expanding the size of the Plan except by increasing the resources available to the public sector. It is necessary also at the same time to see that the level of expenditure in the public sector and the devices used for finding the needed resourcess are not such as to react too adversely on the private sector, the development plans of which are of equal significance from the point of view of the community's interests. To mention this limitation on our present effort is, however, only to underline the need for a bolder policy in the future. The investment expenditure which, in the last analysis, a community can undertake depends, apart from whatever external resources may become available, upon the rate at which it can step up its savings; for, the problem is not just one of diverting investment from the private to the public sector, but of increasing the total.

33. An increase in aggregate investment implies, as stated earlier, a postponement in increases in the standard of living to the maximum extent possible, and fiscal policy is a major device for bringing about this result. Fiscal policy has at the same time to aim at a reduction in inequalities of income and wealth. There is clearly far more scope for cutting down

consumption expenditure in the higher income groups than for tightening of the belt in the lower income ranges. The common man has, undoubtedly, to play his part in financing development, but, on grounds of economic as well as social policy, the more well-to-do classes have to contribute in proportion to their capacity to pay. The question is how this result is to be secured. Direct taxation of the rich is likely to impinge more on their savings than on their consumption. There is need for balancing the advantages of a greater equality of incomes and wealth against the disadvantage of a possible fall in private savings and capital formation. This consideration has special reference to the problem of the immediate future but granted the basic assumptions of a planned economy, it cannot, over a period, be allowed to come in the way either of a progressive reduction of inequalities of income and wealth or of rapid capital formation.

34. The reasoning that direct taxes are apt to reduce savings rather than consumption expenditure and hence detrimental to capital formation is also valid only upto a point. In a system in which public investment has to play an active role, it is of secondary importance whether resources are transferred to the State in the form of taxes (in which case it would add to the savings of the State available for investment) or in the form of loans out of private savings provided there is agreement on the priorities attached to the investment on public account. The real issue which affects both direct and indirect taxes equally is whether taxation is so high as to affect adversely the incentive to produce. Indirect taxation which increases costs of living could also be a disincentive. In this respect, an economy geared to rapid development calls for changes in the traditional attitude to reward for work. It is not without significance that forms of direct taxation which are today considered as the minimum essential in a modern society were in the initial stages regarded as inimical to progress. Similarly, though indirect taxation is generally regarded as regressive and somewhat unfair, the trend in countries which have moved rapidly towards greater equality of incomes has been for the share of indirect taxation to grow. In part, therefore, the problem is one of psychological adaptation to the changing needs of the times and in part a question of whether alternative institutional arrangements can be made quickly enough to compensate for loss of incentive in certain strata of society.

35. The link-up between inequalities of income and capital formation in the early stages of modern economic development in countries like Britain was due to a combination of circumstances in which the promotional and managerial abilities of a particular class had a direct part to play in initiating innovations, evolving new techniques of production and applying them on a commercial scale. The pioneers in the field of development had relatively few avenues open to them for luxurious living. A large proportion of the high incomes they received was thus ploughed back into industry thereby providing the basis for further expansion of the economy. Conspicuous consumption is a later phenomenon, and while it may have a place in rich countries where rapid expansion of consumption in all directions is in a way essential to the maintenance of a high level of economic activity, it is seriously detrimental in the conditions of an underdeveloped country. Though the resources which such consumption directly diverts away from capital formation may be small, it not only creates discontent in the community but also indirectly discourages saving in the economy as a whole by initiating a process of wasteful emulation. It is evident that in a planned economy in which the public sector takes over progressively the promotional and managerial functions necessary for develop-

ment, neither large inequalities of income nor higher consumption standards for particular classes can be justified.

36. Death duties are an important equaliser of incomes and wealth. They are a levy on capital which does not have the same adverse psychological effects as other capital levies. They are capable, over a period, of reducing inequalities to an extent that only a violent upset of the system can achieve if the elimination of inequalities of income and wealth is made an immediate objective. Death duties are now an integral part of the system of taxation in advanced countries and they are levied in several underdeveloped countries as well. The rates of death duty in the U. K. are as high as 50 per cent and over on estates above £100,000 and they go up to 80 per cent on estates valued at over £1,000,000. The efficacy of death duties for correcting inequalities will depend, apart from the rates charged, the limit of exemption, the extent of evasion, etc., on the extent to which checks are placed on individuals earning large incomes and accumulating wealth between successive capital transfers. With a high rate of progression in income tax rates and a structure of controls to regulate relative prices and profits, death duties can make a significant contribution towards reduction of inequalities.

Sources of Savings in the Economy

37. There are at present three main sources of savings: savings by private individuals (that is, personal savings), savings by corporations, and public savings (or surpluses in the public sector). In countries like the U. K. and U. S. A., the role of personal savings as a source of finance for development is no longer as important as it was in the early stages of development. Corporate savings provide in these countries a considerable part of the finance needed; in the U.K. public savings, *i.e.*, surpluses from taxation and from the receipts of commercial enterprises owned by Government, are an important source for financing investment. Corporate savings come ultimately from profits; they represent a ploughing back of the funds that would otherwise have gone into the hands of the shareholders. To a certain extent, this is a desirable line of development, and it is proper to encourage capital formation in the private sector through differential taxation of distributed and undistributed profits. The limitation of this approach, however, is that it leads in the long run to a concentration of economic power in the hands of these corporations, and, through them, in the hands of a few people who happen to have a controlling interest in them. In a country like the United States, a country of corporations par excellence, it has been found difficult in practice to curb the monopoly power of these corporations in spite of anti-trust laws. In the pattern of development we envisage for India, it will, therefore, be necessary to lay more stress on cooperative rather than corporate savings. The cooperative form of organisation is capable of yielding the advantages of corporate enterprise without some of its disadvantages. It is a form of organisation capable of attracting the small man, and members of cooperatives are likely to see easily the benefits that would accrue to them by devoting a substantial part of their current surpluses to investment. The encouragement of the cooperative form of enterprise in all fields of activity, in agriculture, in trade, in finance, in marketing and in industry must, therefore, become a prime objective of Government policy.

38. And, finally, the State must itself raise, to the extent possible, through taxation, through loans and through surpluses earned on State enterprises a considerable proportion of the savings needed. In other words, public savings, as distinguished from private savings,

personal or corporate, must be developed steadily. The financing of investment through public savings would help to ensure a pattern of development in consonance with accepted social criteria.

Prices, Production and Controls

39. Prices are a resultant of all the varied forces acting on the economy from within as well as from without, and there is almost no aspect of governmental policy which does not, in one way or another react on prices. Export-and-import policy, for instance, has a direct bearing on relative prices and profitability. Control and regulation of exports and imports, and in the case of certain select commodities state trading, are necessary not only from the point of view of utilising to the best advantage the limited foreign exchange resources available but also for securing an allocation of the productive resources of the country in line with the targets defined in the Plan.

40. Increase in output, through fuller utilisation of capacity, through improvement in technical and managerial efficiency or through harder and more sustained work all round is basically the answer to inflationary pressures; and this would be a far better way of bringing supply and demand into equilibrium than some of the other devices which, while doing good, have also a somewhat depressing effect on the economy. But since, in the short period, there are limits to the increase in output that can be secured, there is need for making appropriate use of the other devices also.

41. A major problem in this connection is the role of controls in a planned economy. This is a subject which has many aspects and it is possible in this field to fall into a doctrinaire approach which, however sound on abstract theoretical considerations, may prove unworkable in practice. On the other hand, an excessive elasticity of approach to this question may lead to a negation of planning itself. To some extent, over-all controls through fiscal, monetary and commercial policy can influence the allocation of resources, but physical controls are also necessary. Given the fact that, in the initial stages of development it is the excessive pressure on a few commodities which tend to limit the rate of progress, the extent to which physical controls are needed to supplement financial controls may even be regarded as a measure of the utilisation that is being made of surplus resources (like manpower) in the system. The targets of production defined in a plan cannot also be achieved unless a structure of relative prices favouring the desired allocation of resources is maintained. The working of controls during and since the war has demonstrated clearly that if production in a particular line, say, foodgrains, has to be increased, the necessary incentive for the producer cannot be created unless the prices of alternative crops are controlled. In an economy which starts from a low level of output, increases in several lines of production will be found necessary. A simultaneous increase in production in all lines is not possible by merely raising the money reward for work. In the case of certain key commodities, it may be necessary to keep down their prices in order to obviate the need for price rises in several industries which use these commodities. To make this policy effective, controls on production and on movement and physical allocations to consumers become inescapable.

42. Controls in a word are the means by which Government maintains a balance between various sectional interests. Under certain circumstances the accent may be on the maintenance of certain price ceilings, and through these of the real purchasing power of the incomes accruing to certain classes. Under other conditions, the enforcement of minimum prices might be a necessary corollary to a policy of ensuring a reasonable rate of return on effort in certain lines of economic activity. Viewed in the proper perspective, controls are but another aspect of the problem of incentives, for to the extent that controls limit the freedom of action on the part of certain classes, they provide correspondingly an incentive to certain others and the practical problem is always to balance the loss of satisfaction in one case against the gain in the other. For one to ask for fuller employment and more rapid development and at the same time to object to controls is obviously to support two contradictory objectives.

43. Most of the opposition to controls comes, however, from dissatisfaction with the working of particular controls. It must be recognised that controls ineffectively or inefficiently administered may do harm rather than good. It is also true that so long as the public regards controls as so many hindrances to be circumvented if possible, to be put up with otherwise, there will be resentment against controls. To a great exent this is a question of creating the right atmosphere by explaining to the public the relationship between controls and the rate of economic progress that the country can achieve. From this point of view it is an essential condition that the rationale of each control is made clear to the public and the rights and obligations of the parties affected defined in a manner which leaves little scope for doubt as to what is expected of the public and where redress can be had in case of any grievance. It is also vital to the success of controls to make the necessary adjustments in their working from time to time as the conditions governing the supply and demand of the commodities in question change. But, here again, whatever changes are made must accord with the objectives in view and should not throw in doubt the basis of the entire policy.

44. The difficulties of administering an extensive system of controls in an economy organised by and large in small units cannot be under-rated. Methods adopted successfully in other countries are not directly applicable to India. Effectiveness of controls under these conditions can be ensured only through control at strategic points and through encouraging producers' and consumers' organisations which will help to make the actual operation of controls smoother, less irksome and more efficient.

The Pattern of Priorities

45. It will be seen from the above that the priorities in planning and the relative emphasis as between objectives are conditioned to a great extent by the techniques that can be used within a given period for attaining the objectives, and the techniques to be chosen are, in turn, influenced by the objectives in view. Once the decisions in regard to these are taken, the question arises as to priorities as between the different lines of expenditure to be undertaken. Given, in other words, the investment outlay to be undertaken on a consideration of the relative

weights to be attached to the various competing objectives and of the techniques to be employed, the task before the planning authority is to determine the pattern of investment for the period in view. The demands of the economy for development are so large and so pressing that great care has to be taken in allocating the limited resources available. When one views development as a process over a period of years, there is no sector of the economy in which a large increase in investment would not be justified, in fact, it would be inescapable. Within a limited time horizon, however, the problem assumes a different aspect ; first things have to come first. It follows that the conception of priorities over a period has to be a dynamic one, the emphasis as between different sectors shifting as development in those taken up initially prepares the ground for development in others.

46. For the immediate five year period, agriculture, including irrigation and power, must in our view have the topmost priority. For one thing, this emphasis is indicated by the need to complete projects in hand. But, further, we are convinced that without a substantial increase in the production of food and of raw materials needed for industry, it would be impossible to sustain a higher tempo of industrial development. In an under developed economy with low yields in agriculture, there is of course no real conflict between agricultural and industrial development. One cannot go far without the other ; the two are complementary. It is necessary, however, on economic as well as on other grounds, first of all to strengthen the economy at the base and to create conditions of sufficiency and even plenitude in respect of food and raw materials. These are the wherewithals for further development. Japan, for instance, increased its agricultural production by 80 per cent in a generation and still required large scale imports of food and raw materials. Britain, which in the earlier stages of development was in a strong position because of the earlier revolution that had taken place in farming practices and techniques, also emerged at the end of the process an importer of food and raw materials. Countries which start the process of development at this stage must as far as possible look for sources of supply of the necessary food and raw materials within their own borders. In India, with its varied resources, conditions are favourable for securing a balanced pattern of development. The creation of a sizeable surplus in the agricultural sector and mobilization of the same for sustaining increased employment in other sectors is fundamental to development as the experience of the U.S.S.R. in the twenties and thirties shows.

47. The high priority given in the investment programme of the public sector to the improvement of agriculture limits inevitably the investment which the State can itself undertake in industries, especially large scale industries. Progress in this field would, therefore, at this stage depend to a great extent on effort in the private sector. The State in this initial period has to concentrate on the provision of basic services like power and transportation. The State has also special responsibility for developing key industries like iron and steel, heavy chemicals, manufacture of electrical equipment and the like, without which in the modern world continued development is impossible. In these fields it is necessary to anticipate to some extent the nature of the demands that will be made on them over a fairly long period ; in fact, in these cases supply must come first for demand itself to develop at the required rate. The initial investment necessary for the development of such enterprises is large and the period of construction fairly long. A beginning in these directions has therefore to be made from the very start.

48. To the extent that the accent of the plan is on increasing production, the limitation of resources available would restrict the scope for expanding social services. And yet, it is obvious that no plan can succeed unless it "invests" in the improvement of the human material. Even from the point of view of increasing production, social services like education, technical training and health bring in significant returns. Considerable advance in these directions can be made if the necessary urge to improvement is created among the people. The problem is partly psychological. There is also large scope in this field for direct community effort. The spread of literacy among the rural people, for example, can be secured by the literates in the community volunteering their services for carrying through a mass campaign for liquidation of illiteracy. The improvement of public health is often a matter of imparting elementary knowledge regarding sanitation and hygiene. Technical training is vital not only for the process of development itself but also for correcting the present bias in education which is responsible for unemployment in certain sections. In this respect, adequate provision for the finance needed must be made in the plan. At the same time, means must be found for stimulating among the people widespread interest in the application of modern technology to the many small problems familiar to them in ordinary life.

49. In view of the large unutilised and under-utilized resources in the system, schemes for mobilising local effort for local development have to receive high priority. It is schemes of this type spread all over the country, more than major development projects, which are likely to activise these resources. Their contribution to the improvement of living conditions, small though it might appear at first, would in the aggregate and in terms of their cumulative psychological effects be more than proportionate to the initial investment involved. Programmes of community development based on this principle and aiming at an intensive all-round development of selected areas are of special value from this point of view.

CHAPTER III

ASSESSMENT OF RESOURCES

The Five Year Plan outlined in the next chapter relates directly to the public sector but has in view a programme of development for the entire economy. In the public sector are included the development programmes of the Central and State Governments and also of the commercial enterprises owned by them*. The private sector covers the rest of the economy including corporate and cooperative institutions as well as small enterprises throughout the country in agriculture, industry, transport and finance. While the initiative for development in defined fields as well as the responsibility for coordinating the development programmes in the entire economy will lie with the State, private initiative and effort have also a significant part to play in the process of development. The development expenditure in the Plan referred to as such in this Report has to be related to the resources available to the public sector, but these have also to be linked up with the needs and resources of the private sector. There is, in other words, a single pool of investible resources on which the private and the public sectors have to draw. The problem is not merely to find resources for the public sector but to enlarge progressively the size of the common pool and to see that the total thus available is allocated between the two sectors in terms of agreed priorities.

2. The Five Year Plan as it is now being presented, involves an outlay of about Rs. 2069 crores by the Central and State Governments over the period 1951-56. On present calculations the normal revenue and capital receipts of public authorities, including loans and grants received upto now from abroad, are expected to finance about Rs. 1414 crores of this expenditure. Deficit financing in the public sector—of which more will be said later—cannot at this stage be visualised in excess of about Rs. 290 crores. There is thus still left a gap of Rs. 365 crores which can be met only from external sources or, in the absence of it, by additional measures of internal taxation and borrowing or by further deficit financing.

3. It is clear that external resources are necessary in the early stages of development and that they could be a significant factor in eliminating bottlenecks and in helping to avoid dislocations which may have far-reaching consequences. In the conditions in which the country is placed today, however, a programme with relatively modest targets cannot be made inflexibly conditional on the availability of external resources. Development is a process in which once certain main lines of work have been commenced, supplementary investments have also to be undertaken. Thus there develops in stages a rate of expansion which cannot be slowed down without serious repercussions.

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*Strictly speaking, public sector should cover also municipal corporations and other local authorities ; it has not been possible, however, to include their development programmes in the present Five Year Plan.

4. The outlay on development by the Central and State Governments in 1950-51, the base year for our calculations, was about Rs. 232 crores. The development expenditure in 1951-52 has been tentatively estimated at Rs. 285 crores. The budgeted outlay for the second year of the Plan is Rs. 346 crores. In 1953-54, by when the expenditure on many of the projects in hand will have reached their peak levels, the total will exceed Rs. 400 crores. If external assistance is not forthcoming to the extent necessary there will undoubtedly be scope for marginal adjustments, but a planned outlay of the order of Rs. 2069 crores over the five-year period is necessary for maintaining the rate of growth of development expenditure visualised by us. The need for attaining a rate of investment in this period which could form the basis of more rapid advances in the following years and lay the foundation for balanced regional development in the next planning period has been an important consideration in determining the development programme in this Plan.

5. The problem of resources is basic to the whole question of planning. It is, therefore, necessary to be clear not only as to the basis on which the Plan is built, but also about the implications of the different methods and techniques which are visualised for meeting the requirements of development in this period. The various aspects of this problem are discussed in some detail under the following heads :—

I. Taxation and public savings as a source of development finance ;

II. Budgetary resources of the Central and State Governments ;

III. Deficit financing ;

IV. External resources and the problem of foreign exchange ; and

V. The problem of mobilising financial and physical resources.

I. Taxation and Public Savings as a Source of Development Finance

Magnitude of savings in the economy

6. Though the outlay in the Plan itself relates directly to developmental expenditure by public authorities, the problem of resources for meeting this outlay has to be viewed, as already mentioned, in a wider setting. For the country as a whole, the resources that can be applied to development depend on the level of aggregate output that can be attained and on the consumption requirements of the community. The larger the output and the lower the consumption requirements, the greater would be the productive resources available for building up the human and material resources of the country for the future. The precise division of responsibility for development, between the public and the private sectors is mainly a question of internal arrangement depending on the objectives in view and what seems to the community the most effective and acceptable means of achieving them ; once this is agreed upon for the period of the Plan, appropriate measures could and have to be devised for the necessary division of resources. But an assessment of the total resources available to the country as a whole for development is necessary for analysing the full implications of the arrangements proposed for financing the Plan in the public sector.

7. The data available in India for an analysis of output and consumption requirements by different sectors are altogether inadequate. There is only scattered information which might be pieced together for forming an idea of the nature of the problem and of the orders of magnitude involved. Some rough estimates have been attempted for this purpose in the Appendix on 'National Budgeting and the Plan'. These estimates place India's national income in 1950-51 at around Rs. 9000 crores. Of this, the savings available for net investment were probably not much more than Rs. 450 crores. The Five Year Plan is roughly estimated to raise the national product by about Rs. 1000 crores by the end of the five years. Over one half of this increase will be absorbed by the needs of the increase in the population in the meanwhile. It is clear, therefore, that if capital formation from out of domestic resources is raised by 50 per cent in the course of this period *i.e.*, from about Rs. 450 crores in 1950-51 to Rs. 675 crores by 1955-56, it would in effect be taking away about half of what is left over from the increase in the national product for raising standards of living. But raising capital formation from domestic resources by 50 per cent is not an excessively high target in view of the considerations we have set out in Chapter I. As a proportion of the total increase in national output by 1955-56 the increase in resources devoted to investment would be only about 20 per cent. It should be emphasised that this proportion of reinvestment from the additional output, which is involved in reaching the target, will be necessary to sustain the rate of development we visualise in this five year period.

8. In comparing the total domestic resources that might thus be available—say about Rs. 2700 to 2800 crores over the five year period—with the development expenditure in the public sector proposed in the Plan, it must be borne in mind that net investment is a restricted concept which covers, in the main, only net additions to capital equipment and building construction. The outlay of Rs. 2069 crores by public authorities in the five year period will include not only such additions but also expenditures of a recurring nature on agricultural extension services, health, education, community projects, etc., which may amount to about Rs. 400 crores over the period of the Plan. The net investment in the programme, comparable to the estimate of savings referred to above, will therefore be of the order of Rs. 1600—1700 crores, which means that the Plan would require channelling through the public sector about 60 per cent of the savings of the community in this period.

9. The releases from India's sterling balances together with other external resources that may become available in this period, will reduce the share of savings to be channelled through the public sector to about 50 per cent. Normally, even half of the investible resources of a country being diverted in this way would be considered a high proportion. But this we regard as inevitable in India at this stage considering the urgent need for investment in spheres like irrigation, power and transport which do not normally attract private agencies but which are pre-requisites to the further expansion of the economy. Moreover, the State is not as it were drawing from a given capital fund; it is in a position, through fiscal and other measures, to regulate consumption standards within limits and thus release for investment resources which might not otherwise have been forthcoming. As mentioned in an earlier chapter, enlargement of public savings through taxation and through the earnings of public enterprises is one of the major means open in the present state of our organisation to raise significantly the level of net savings in the country.

Narrow coverage of tax revenues

10. India's total tax revenue in 1950-51 (including the tax revenues of both the Central and the State Governments) amounted to a little over Rs. 625 crores, nearly Rs. 50 crores of which was on account of export duties. As a proportion of national income *i.e.*, about 7 per cent, this level of revenue represents one of the lowest in the world. Taking the revenues of the central governments alone (that is, excluding revenues of local authorities in all cases and of State governments in the case of federations), the proportion of tax revenue to national income is as high as 35 per cent in the United Kingdom, 22 per cent in Australia, 23 per cent in the United States and in Japan, 27 per cent in New Zealand, 19 per cent in Canada, and 20 per cent even in Ceylon. Too much should not be read into this comparison as yields from taxation depend not only on the facilities for collection afforded by particular structural factors (as when corporate incomes are a large proportion of the national income or foreign trade accounts for a considerable part of the transactions) but also on the absolute levels of *per capita* income. Much also depends on the importance of monetary transactions in the economy ; when a large part of the production is raised by the labour of peasant families and directly consumed by them, the scope for organising taxation would be obviously smaller than if the operations were being conducted through markets and result in monetary transactions. Yet the comparison has its significance, for if the proportion of the national income covered by taxation is as small as it is in India today the public sector cannot, in the immediate future, increase its savings to any significant extent and thus either raise the level of investment in the economy as a whole or provide social services on an adequate scale.

11. A striking feature of the present structure of taxation in India is the relatively narrow range of population affected by it to any appreciable extent. About 28 per cent of the total tax revenue comes from direct taxation* which directly affects only about half of 1 per cent of the working force in the country estimated at 133 million in 1948-49. Another 17 per cent is accounted for by import duties, a considerable part of which is derived from taxation of commodities like motor vehicles, motor spirit and oils, high-quality tobacco, silk and silk manufactures, liquors and wines, etc., which affect but a relatively small section of the population. A large proportion of the excise duties on tobacco and cloth, which yield about 8 per cent of the total tax revenue, is also probably paid by the limited number of consumers who use the better varieties. Given the structure of incomes in the country it is of course inevitable that the coverage of direct taxation should be narrow ; it is also right that an element of progression should be introduced through higher taxes on commodities which, relatively to the general pattern of consumption of the community, may be regarded as luxuries. In fact, ways and means for raising the revenue from these sources must be constantly explored. But if as much as one-third or more of total tax revenue is derived from certain limited strata of society it implies that the burden of taxation spread over the rest of the community is correspondingly lighter and that relatively small increases in the rates of taxation on the latter will help to add significantly to total tax revenue.

*Whether land revenue is a direct or an indirect tax is a somewhat controversial point. For the purpose of the calculation here it has been treated as an indirect tax.

12. In this connection it may be recalled that, in countries which are largely agricultural, and in which transactions involving money are a smaller proportion than in more industrialised systems, land has been traditionally an important basis for taxation. In Japan, when its programme of industrialisation was being initiated in the 1870's, taxation of land yielded as much as 13 per cent of the value of gross agricultural produce ; even thirty years later, when other forms of taxation had developed, land tax accounted for nearly half of the total tax revenue of the government. Thus, in a sense, it was taxation of land which in Japan provided the initial resources required for development. In India also land taxation was high before the last War and, in the depression years, it weighed heavily on the farmer. In the last decade prices have moved in favour of primary commodities and, since in most parts of the country land revenue has not been raised upwards, the burden of this tax has been considerably lightened. It is reflected partly in the fact that land revenue contributes at present only about 8 per cent of the total tax revenue as compared to about 25 per cent in 1939. The rise in agricultural prices has however benefited significantly only producers with sufficiently large marketable surpluses ; it is also true that costs of production have gone up in many cases. The improvement in prices cannot therefore by itself be made the basis for a substantial upward revision of the tax on land. But within the context of a development programme designed as much to raise agricultural prosperity as to promote all-round economic development, a programme towards which all sections of the community have to contribute to the maximum extent possible, there is a case for moderate upward revision of land revenue. At the moment the capacity of the agricultural sector to bear further additions is limited, but this will no doubt improve as the programme of development gets into swing and, with additional irrigation and other facilities, agricultural productivity is stepped up. Betterment levies designed to draw into the public exchequer a proportion of the capital gains that accrue to private parties as a result of development are a recognised device for strengthening public savings. It is the essence of rapid development that, consistently with the need to raise the standards of living of the poorer sections of the community, as much of the additional incomes generated should be ploughed back into the system by way of investment for still more rapid increases in output.

13. Apart from the question of legal coverage, there is the question of actual coverage which is a function of the administrative arrangements for securing that those liable to tax do in fact pay. In India it would appear that there are considerable leakages on this account. The following table shows estimates of income assessed to income and super taxes as well as the amounts paid by way of these taxes in the various income ranges in 1950-51.

Income range (rupees)	No. of Assessees (thousands)	Total income assessed to tax* (Rs. crores)	Yield of income and super taxes (Rs. crores)
0-5,000	236·8	81·0	2·3
5,000-10,000	134·4	93·2	5·1
10,000-40,000	86·9	152·9	24·9
40,000-100,000	10·1	59·9	23·3
100,000 and over	4·2	187·7	99·4
	472·4†	574·7	155·0

*Income assessed to tax is after allowing for depreciation allowances of business enterprises, earned income relief, etc.

†The number of assessees on the register at present is about 850,000. Part of this increase is accounted for by the inclusion of assessees in Part B States, but there has also been considerable improvement in the reporting of assessable incomes in the lower ranges.

It will be seen from this that, though there is undoubtedly a strong case on grounds of equity for making the higher income groups bear a larger share of the burden of development, fairly large proportions of the incomes in the higher ranges, in so far as they are covered by the administrative machinery, are absorbed by direct taxation even at existing rates. Over a wide range, there is, however, evasion of taxation. The reports of the Income Tax Investigation Commission show that such evasion takes place in the middle as well as higher income ranges. The fact that the corporate form of organisation is confined to a limited sector of business renders the problem of checking evasion difficult, particularly in regard to trading operations. Even where the corporate form exists, the close inter-locking of managerial and other controlling interests in industry, trade and finance offers to the unscrupulous opportunities for evasion. If such evasions could be stopped, it might make a considerable addition to the receipts under direct taxation.

14. Where the scope for direct taxation is limited, the incomes of the greater part of the population can be reached only through taxation of commodities. As mentioned earlier, an element of progression can be introduced through higher taxes on commodities which, relatively to the general pattern of consumption in the community, may be regarded as luxuries. In the United Kingdom direct taxes on incomes cover a large sector and the need to rely on indirect taxation is correspondingly less ; import and excise duties, however, are still heavy enough to account for a sixth of the total personal consumption expenditure in the country.* In India, apart from these two sources, it is clear that increasing reliance will have to be placed on sales taxes. Through sales taxes can be reached commodities not covered by either import or excise duties ; they have also the advantage that they can be adjusted to particular regional conditions. The problem here is again one of administration ; it has to be ensured that those liable to tax do in fact pay so that progressively the legal coverage of sales taxes could also be extended to cover a larger range of trading activity.

15. The narrow coverage of taxation is responsible to a great extent for the relatively small proportion of the national income absorbed by the government in the form of tax revenues. It also accounts partly for the existing level of taxation appearing to be heavy. Both ways it restricts the extent of public savings. The narrow coverage of existing taxation has the further indirect effect of increasing the dangers of deficit financing. For the smaller the proportion of the additional incomes mopped up by taxation, the greater would tend to be the pressure of demand on output arising from a given measure of deficit financing.

Scope for higher taxation

16. These are matters which cannot be overlooked in framing a programme of development, especially when it is clear that with net savings of about 5 per cent of the national income the rate of progress that can be attained will be extremely limited. In the initial stages of planning, however, the size of the programme as well as the sources of finance will have to be fixed keeping in view what can be achieved through existing institutions and the available administrative and

*Much the greater part of this revenue comes from tobacco and alcohol.

fiscal machinery. Taxation has also its limitations within a given political and economic structure. Turnover taxes on the scale in evidence, for instance, in the Soviet Union involve a degree of organisational control over production and internal trade which again cannot be realised in India in the near future. While, therefore, taxation policy in India must be designed to raise the level of tax revenues to meet the needs of development, it will have to be adjusted also to the economic and social framework within which development has to start.

17. According to present estimates, by the end of the Five Year Plan, the tax revenues of the Central and State Governments are likely to be about Rs. 70—80 crores higher than in 1950-51 ; if there are unexpected receipts on account of items like export duties the increase may be of the order of Rs. 100 crores. This estimate covers the normal increases that might be expected at the existing rates of taxation as well as the estimated yields from a variety of measures like increases in the taxes on land, higher irrigation rates, death duties, betterment levies, better administration and wider coverage of sales tax, higher taxes on luxuries, etc. Some of these, it will be noticed, are taxes on capital transfers and capital gains and not strictly taxes on current income. But assuming normal conditions, the increased rates of taxation, together with these levies on capital transfers and capital gains, will only enable the level of tax revenues to be maintained at about 7 per cent of the national income even at the end of the Plan. If conditions abroad are favourable for raising larger revenue from export duties than has been assumed in our estimates, and if it is also found possible to raise direct taxation, total tax revenues could be raised by about Rs. 30 crores per annum, but the difference it would make to the above percentage would be small. Apart from this, we should emphasize that unless fiscal policy and the machinery of taxation are re-orientated so as to obtain a significantly wider coverage the tendency will be not only for tax revenues to fall as a proportion of further additions to national income but to make the sharing of the burden of development increasingly iniquitous.

II. Budgetary Resources of the Central and State Governments

Classification of sources

18. The financial resources available to a government for development can be broadly distinguished as of two kinds : (*a*) the savings it can make from current revenues and from the earnings of State enterprises after meeting its non-developmental expenditures, and (*b*) the private savings it can draw upon through loans, small savings, deposits and funds, and other miscellaneous channels. A grouping of the resources of the Central and State Governments, which follows strictly the distinction between these two categories of savings and also adheres to a definition of ' net savings ' corresponding to that of net investment referred to earlier, would require considerable reclassification of budgetary accounts. From the operational point of view also, such a rigid analysis has its limitations. For the purposes of our analysis here, a some-what looser grouping has therefore to be attempted.

19. The Five Year Plan treats as development expenditure not only additions to fixed capital equipment and building constructions figuring in the revenue and capital accounts of the Central and State Governments but also initial recurring expenditures on social services,

agricultural extension services, etc., which are almost invariably financed from current revenues. On the other hand, capital expenditure on items like defence is non-developmental from the point of view of the Plan. The savings of the public sector, corresponding to this definition of development, are therefore the surpluses of revenue over such consumption expenditures of the government as have been treated as non-developmental in the Plan*. As for estimates of private savings which the Government might draw upon, the net receipts from loans, small savings and other unfunded debt, deposits and funds, etc., would obviously come under this category. But there are a number of transfers within the Government budgets, from the revenue to capital accounts as well as between the capital accounts of the various federal units, some of which may represent additions to public saving and should really be included under that head. These items cannot be traced without detailed scrutiny. They are therefore apt to come under our estimate of private savings channelled into the public sector through ' deposits, funds, and other miscellaneous sources'†.

Growth of public savings and capital receipts

20. Classifying in this way the budgetary resources likely to be available to the Central and State Governments over the period 1951—56, public savings, it is estimated, will finance about Rs. 738 crores of the expenditure visualised in the Five Year Plan. Capital receipts are expected to contribute another Rs. 520 crores. The two sources will together meet about Rs. 1,258 crores of the planned outlay of Rs. 2,069 crores.

21. What these estimates imply can be seen with advantage in the light of the actuals for a past year. If we take 1950-51 as the base, public savings estimated on a comparable basis work out to about Rs. 145 crores. The estimate for public savings for the five-year period thus only about maintains on an average the level reached in the base year. The fact that no significant increases over this level are visualised in the estimates in spite of the anticipated increase in tax revenues over the period of the Plan is explained mainly by two factors. In the first place, windfall revenues from export duties and from arrears of income tax had helped the Central Government to develop a substantial revenue surplus in 1950-51. In 1951-52 there was an even larger surplus, but the subsequent recession abroad makes the recurrence of such surpluses problematic. The maintenance of the level of public savings on an average at the level reached in 1950-51 therefore itself presumes additional revenues from other sources. Secondly, the outlay on defence has risen substantially since the base year, the budgeted provision for 1952-53 being about Rs. 215 crores as compared to the expenditure of Rs. 168 crores in 1950-51. The growth in defence expenditure is accounted for by the needs of the infant

*While expenditure on defence and administration, whether on revenue or capital account, would thus be deducted from current revenues, development expenditures in the Plan met from revenue would be excluded. In other words public savings would be equal to total current revenues *minus* expenditure of a non-developmental nature on revenue account and also *minus* any non-developmental expenditures on capital account other than capital transfers which as explained below, are deducted appropriately in calculating the net capital receipts of the government from the private sector.

†Net receipts under these heads are calculated after deducting capital transfers from the Government to the private sector on account of refunds of excess profits tax and income-tax deposits, loans by Government of a non-developmental nature, etc. Receipts under these heads by way of withdrawals from reserves are also deducted.

services (*i.e.*, the Navy and the Air Force) and by the large scale replacement of equipment throughout the defence services which has been found necessary. Under these heads it is at this stage difficult to visualise any substantial economies in the Plan period. There is also urgent need for establishing defence industries of key importance, though the sums that can be provided for these are at present only a small proportion of the investment needed.

22. The main improvement expected in the resources position of the Central and State Governments from the point of view of development is in respect of capital receipts. In 1950-51, the net yield from loans, small savings, deposits and funds, and other miscellaneous sources amounted to about Rs. 77 crores; of this Rs. 16 crores was however in the nature of extraordinary receipts under state trading. Over the period of the plan the same sources are estimated to yield Rs. 520 crores, showing an improvement on an average of the order of Rs. 43 crores per annum. In 1950-51 the Central Government had no net receipts from deposits, funds, and other miscellaneous sources mainly because of large refunds of excess profits tax and income tax deposits and certain extraordinary items of payment which fell due. The revised estimates for 1951-52 and the budget estimates for 1952-53 show that the net receipts of the Centre under the same heads would amount to about Rs. 31 crores in these two years. The estimate for the Plan period also takes credit for receipts of the order of Rs. 11 crores from certain capital accretions on account of the Plan*. In addition to the above the subscriptions to government loans are expected to register substantial increases. Investment in Government securities from out of the proceeds of the newly constituted provident fund for industrial workers is estimated to yield Rs. 36 crores. As will be explained later, the absorption of securities by the market was exceptionally low in 1950-51 for much the same reasons that account for the high level of public savings in that year.

23. The financial programme as outlined here does not presume any radical changes in the machinery of taxation or in the techniques of borrowing. There is no doubt that there is considerable scope for improvement in both. Techniques of borrowing, in particular, have to be adapted so as to convey to the people the larger purposes for which the loans are being raised and to facilitate their participation in the development programme on the largest possible scale. Ways and means of checking the growth of non-developmental expenditures have also to be continuously and unremittingly pursued. To these we shall come back at a later stage.

Responsibility for raising resources : division between Centre and States†.

24. The above assessment of resources available for the Plan, in so far as it concerns the Central Government, has been made in the light of the revised estimates for 1951-52 and the budget estimates for 1952-53. In the case of the States we have retained for the present the estimates made over a year ago and have also provisionally assumed that, corresponding to certain increases in net outlay proposed by some of the State Governments, the additional

*These receipts are from land reclamation and from the development of the Andamans.

†In this chapter, Part C States have been included under the Centre, and 'States' refer only to Parts A and B States and Kashmir.

resources necessary would also be found by them from current revenues. Some part of these increases is of an accounting nature since they arise from inclusion of development schemes which were being implemented out of the resources of the States but had not been previously treated as such. It is clear however that a reappraisal of State finances will be necessary in the near future, particularly in the light of the recommendations of the Finance Commission. The following table, which gives the breakdown of the estimates, for 1950-51 as well as for the Plan period, shows the division of responsibility between the Centre and the States for raising resources as it is now visualised.

	Base year 1950-51			Plan Period 1951-56		
	Centre (including Part C States)	Parts A and B States and Kashmir	Total	Centre (including Part C States)	Parts A and B States and Kashmir	Total
Public Saving from						
(*a*) current revenues	71	51	122	160	408*	568
(*b*) railways . .	23	..	23	170	..	170
Private savings absorbed through						
(*a*) loans from the public . .	—11	8	—3	36†	79	115
(*b*) small savings and other unfunded debt	42	..	42	270	..	270
(*c*) deposits, funds and other miscellaneous sources (net) .	..	38	38‡	90	45	135
TOTAL .	125	97	222	726	532	1258

25. According to the financial programme drawn up last year in support of the State Plans, the State Governments were in all to raise about Rs. 213 crores of additional revenue over the five years. This would now have to go up to Rs. 232 crores on account of the further addition

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*Includes Rs. 3 crores estimated as available from the current revenues of Kashmir for financing the State Plan.

†Represents estimated investment in government securities from out of the provident funds of industrial workers; taking this into account provision is made in the Plan for loans and grants for industrial housing of the order of Rs. 38·5 crores.

‡Of this Rs. 16 crores was on account of state trading through reduction in stocks. Some of the accumulaties in the States is also perhaps due to delays in transfer of amounts due to the Centre.

of Rs. 19 crores by some of the States to the outlay in their Plans. Measures to be adopted in respect of about three-fourths of this amount were settled in consultation with the State Governments concerned; the nature of the measures contemplated will be evident from the following table :

(Rs. crores)

1 Revenue from taxation on land (covering land revenue and agricultural income tax)	34.0
2 Revenue from irrigation (covering irrigation rates and betterment levies)	29.5
3 Revenue from other commercial ventures of the State (*i.e.*, forests, electricity and minerals)	4.8
4 Revenue from capital transfers (*i.e.*, from Estate Duties)	21.3
5 Revenue from taxation of general commercial activity (*i.e.*, Sales Tax)	25.5
6 Revenue from other miscellaneous sources (including taxes on luxuries)	37.5
7 Revenue from economies in non-development expenditure	12.4
	165.0*

26. The estimate of the total additional resources to be raised by State Governments for the implementation of the development programme was based on preliminary estimates made early in 1951 which indicated an overall deficit in the State budgets of the order of over Rs. 30 crores in the base year 1950-51. The final accounts for the year show that the budgetary deficits of State Governments were in fact much smaller. Compared to the revenues realised in 1950-51, therefore, the States would not have to raise additional resources of the order estimated earlier if expenditure not covered by the Plan under administrative as well as developmental heads like education, health, etc., were not allowed to exceed the original estimates. In practice, as will be mentioned later, the revenues of State Governments have continued to rise even above the 1950-51 level—without the measures contemplated for raising additional resources being taken on any significant scale—but non-Plan expenditures have been rising even faster with the result that the original target in regard to additional resources has to be still more or less maintained.

The borrowing programme

27. The borrowing programme of the Centre and the States involves in all raising an amount of Rs. 385 crores over five years. This includes loans, as well as small savings and other unfunded debt, but excludes possible net receipts from treasury bills and other floating debt. In 1950-51 loans, small savings and other unfunded debt yielded a net sum of only about Rs. 39 crores ; in respect of loans there was in fact a net outflow. Over the period of the Plan, investment in government securities from out of the provident funds of industrial workers is

*The need for raising the remaining Rs. 67 crores has arisen mainly out of the proposals made by some of the State Governments, subsequent to the consultations with the Commission, for raising the size of their State Plans. The upward revision in the targets of expenditure have been accepted provisionally on the condition that the resources corresponding to these would be raised by the governments concerned.

expected to yield about Rs. 36 crores. The scope for government borrowing has also to be judged in the light of several other factors. During the war, when money was plentiful and the general level of liquidity high, the market was naturally more receptive to long and medium term loans. But to the extent that the holdings of long and medium terms securities at the end of the war were higher than what the community would normally have held, they were (along with the large holdings of money) part of the latent inflationary potential in the country left by the war. Since the end of the war there has been a marked shift in favour of more liquid assets. The large scale liquidation of securities in the post-war period may therefore be regarded in a sense as part of the adjustments involved in the return to a more normal pattern of asset holdings. It is difficult to say to what extent this process has been completed or in which direction the preferences of the community might move in future, but it would appear that at least the market for short term and medium term loans is more favourable than it has been for some time.

28. In 1950-51 there were exceptional factors, following the outbreak of the Korean War, which encouraged sections of the community to move away from holdings of money to holdings of commodities. The large scale liquidation of government securities by the commercial banking system, which was a major factor in depressing the market for these securities, was a feature resulting from this movement. In that year the Central and State Governments also sold fairly large amounts from their own holdings of securities. The net absorptive capacity of the market in regard to Government loans cannot therefore be assessed with reference to 1950-51, though it is noteworthy that, even in that year, the non-banking sector of the economy did probably absorb a considerable part of the securities thrown on the market.*

29. In estimating the resources of the Central and State Governments, it may be emphasised, we have not taken credit for the possible receipts from sale of government securities held in the Cash Balance Investment Accounts. It follows that the entire savings of the community likely to go into Government securities could be taken credit for as available for fresh issues. The new links that are being established between the Reserve Bank and the commercial banking system will also furnish the latter with the means of preserving liquidity in times of heavy demand without having to unload securities on a large scale. Two factors which affected adversely the absorptive capacity of the market in regard to fresh issues in 1950-51 are thus likely to be less prominent in the future.

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*The following statement shows the changes in holdings of Central Government rupee loans (excluding Treasury Bills and Treasury Deposit Receipts as well as Ways and Means Advances) between June 1950 and June 1951 :

(Rs. crores)

	June 1950	June 1951
Total current rupee loans :	1,447	1,447
Of which held by :		
(1) Reserve Bank of India :—		
(a) on its own account	247	330
(b) on account of others	217	203
(2) Commercial and Cooperative Banks	358	299
(3) Insurance Companies	113	113
(4) Part A and B States	209	148
(5) Non-residents	61	60
(6) Others	242	294

30. The outlook in regard to small savings is also distinctly better over the Plan period than it was in 1950-51. From Rs. 33·5 crores in that year the budgeted figure for 1952-53 has gone up already to Rs. 44·5 crores. Together with other unfunded debt the average annual rate of Rs. 54 crores visualised as part of the financial programme should be therefore relatively easy of achievement. The objective must in fact be to surpass this target. It has been agreed recently that proceeds from small savings collected by the States in excess of the present level of Rs. 44.5 crores will be retained by the States responsible for raising them, the amounts thus retained being treated as loans from the Centre. This arrangement is designed to promote the small savings campaign more effectively by helping the State Governments to link up small saving with schemes of local development in which the people are directly interested.

Sharing of resources between the Centre and the States

31. Over the period of the Plan, there will be a flow of assistance from the Centre to the States under a variety of heads. Apart from grants-in-aid of a statutory nature, the States will receive assistance in the form of loans for river valley schemes, minor irrigation, rehabilitation of displaced persons, community projects, cottage and small scale industries, and other schemes of development included in the Plan as well as grants from the Central Road Fund for construction of roads, grants for relief of displaced persons, grants for raising food production, etc. For operational reasons, many of the schemes of development for which the assistance mentioned above will be given are included in the Plan as part of the development schemes of the Central Government, and so the estimated assistance for the State Plans as such works out to only about Rs. 193 crores.* But this, we must emphasise, is only a matter of presentation and the share of the States in the development programme of the public sector, as well as the magnitude of the transfers which will be necessary from the Centre to the States, are both very much larger than would appear at first sight.

32. In the " Central assistance " as estimated for operational purposes, referred to above, has been included assistance only under the following heads : bonuses on food procurement (now discontinued), grants and loans for the Grow More Food Campaign, special grants to Part B States for development, and loans for ' miscellaneous development '†. The contribution which these would make to the financing of the State Plans will be evident from the following statement which compares the position in 1950-51 with the estimates in the Plan :

(Rs. in crores)

	1950-51	1951-56
Resources of Part A and B States and Kashmir . .	97	532
" Central Assistance "	31	193‡
		plus 4
Total Resources available for Development Expenditure .	128	729
Development Expenditure as in the State Plans . .	118	796
Surplus (+) or Deficit (—)	+10	—67

*Of this Rs. 10 crores will be for Kashmir.

†Loans for 'miscellaneous development' is a budgetary head which includes loans for irrigation and power projects, industries, etc.

‡Includes assistance of Rs. 10 crores for the Kashmir State Plan ; in addition Rs. 4 crores is to be given by way of statutory grants for scheduled tribes which will be available for part of the development expenditure on scheduled tribes in the Assam State Plan.

33. From a preliminary review of the working of the State Plans in 1951-52 and the budgets of the State Governments for 1952-53, it would appear that the task of organising finances to the pattern outlined in the above paragraphs has by and large yet to begin. In 1951-52 the developmental expenditure of the States was about Rs. 135 crores, which is about Rs. 24 crores lower than the average annual rate contemplated over the period of the Plan; the "Central Assistance" in 1951-52 amounted to a little over Rs. 34 crores, and the States were also able to raise nearly Rs. 11 crores by way of loans from the public. The short-fall in resources was still as high as Rs. 68 crores, and this had to be met by drawing down reserves. The reserves of the State Governments are limited and this process cannot go on for long. There were of course special factors in 1951-52 to account for the pressure on State finances, like famine and floods in several States and a marked accumulation of food stocks. It is also true that larger deficits were anticipated in the State budgets in the initial years of the Plan than in the later years. The magnitude of the short-fall in resources in 1951-52 is however still too large to be explained by these considerations alone.

34. As mentioned earlier, the revenues of State Governments have been rising over the last two years, but expenditures outside the State Plans have been more than absorbing these increases. The increase in expenditures is not only under administrative but also under other heads like agriculture, education, health, etc., where any major expansions should be normally on items included in the State Plans. It would appear that there has been a tendency for schemes outside the Plan to be taken up in addition to those already in it. To the extent that this is done and a close check is not kept on non-developmental expenditures of all kinds, the implementation of the State Plans is bound to suffer. It is probable, that, in the case of certain States, the need to bring up the level of administration, as well as the increased demands that are being made on the administrative machinery even for preparing the foundation for development planning, will require some expansion in 'non-developmental' expenditure. These considerations, as well as the relative merits of the schemes which are now being added on as compared to the schemes which were originally in the State Plans, are matters which deserve close examination. But we must emphasise that the capacity of the Centre to give additional assistance is limited. As will have been evident from the earlier paragraphs, there is a short fall in resources even for the commitments which it would have to undertake under the Plan as now visualised. The whole scheme of Central assistance, as now worked out, may have also to be readjusted in the light of the recommendations of the Finance Commission. All these would have to form part of the re-assessment of State finances referred to already in paragraph 24 of this chapter. It seems inescapable in any case that the measures contemplated for raising additional resources at the initiative of the States must be regarded as an integral part of the programme of development set out by us.

III. Deficit Financing

35. The above assessment of the resources of the Central and State Governments brings us to the question of the scope for deficit financing for development. The term 'deficit financing' is used to denote the direct addition to gross national expenditure through budget deficits, whether the deficits are on revenue or on capital account. The essence of such a

policy lies therefore in Government spending in excess of the revenue it receives in the shape of taxes, earnings of State enterprises, loans from the public, deposits and funds and other miscellaneous sources. The Government may cover the deficit either by running down its accumulated balances or by borrowing from the banking system (mainly from the Central bank of the country and thus " creating " money)*.

36. In 1950-51, the base year, budgetary deficits were of a relatively small order as will be seen from the estimates below :

(Rs. in crores)

Centre		*States*	
Resources available for development and for assistance to States.	125	Resources available for development.†	97
Development expenditure at the Centre on schemes included in the Plan and on schemes comparable to them completed in the year.	114	" Central Assistance " . .	31
" Central assistance " to States	31	Development expenditure .	118
DEFICIT (—)	20	SURPLUS (+)	+10
Covered by—		*Reflected in—*	
(*a*) withdrawals from cash and security reserves.	11	(*a*) increase in reserves	5
(*b*) short-term borrowing (*i.e.*, by increase in floating debt).	9	(*b*) reduction of short term indebtedness.	5

But the country as a whole had a surplus in its external account on account of the extraordinary international conditions which developed during the year. This meant that, instead of having domestic resources supplemented by external resources, India was, in effect, investing part of its current savings abroad. In 1951-52, the first year of the Plan, this trend was reversed and there was a substantial deficit in India's balance of payments financed from the sterling releases carried over from the earlier years as well as from the fresh releases for the year. The development expenditure in the public sector was larger—and so also the budgetary deficits—but the supplementing of domestic by external resources made it possible to meet these increases without excessive strain on the economy. Imports of food in 1951-52 were also the highest for any post-war year, which carried with it the assurance that inflationary pressures could be checked at the most vital points. It is in the light of these special factors in 1951-52 that the disinflationary forces which began to develop in the economy towards the later part of the year have to be assessed.

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*No credit has been taken in our estimate of revenues for possible net increases in the governments' floating debt ; the scope for using these as a source of finance by sale of treasury bills to agencies other than the central bank have to be explored from time to time for reducing budgetary deficits.

†Include resources which became available from State trading through reduction of food stocks.

37. The experience of 1951-52, contrasted with that of 1950-51 indicates the importance of external resources in relation to the financing of development. The greater the availability of external resources the less will be the strain on the internal economy. The precise role which external resources could play in relation to the Plan is dealt with in some detail in subsequent paragraphs.

38. At the present stage, the external resources that can be firmly counted upon for the Plan—apart from loans and grants from abroad already received which we take credit for elsewhere in our estimate of resources—are the releases from India's sterling balances,* estimated at Rs. 290 crores over the five-year period. This, so far as it is possible to visualise now, may be regarded as the safe upper limit to deficit financing. The position will of course have to be reviewed from time to time in the light of prevailing conditions.

39. It is true that stability of prices cannot be an end in itself, particularly if this can be attained only by restricting the incomes of the large mass of the people. It is also true that some increases in purchasing power at chosen points may be necessary and even desirable for the smooth functioning of the economy. The point we would however like to emphasise is that deficit financing can be countenanced only if and to the extent that there is assurance of steady supplies of the essential commodities of consumption. Deficit financing should not also be expected to provide the elasticity in money supply which must really come through the credit system. The scope for deficit financing at any particular time must be judged not so much in terms of movements in wholesale prices or in money supply but rather in the light of the trends in the cost of living indices. When costs of living are high, increased purchasing power injected into the system is apt to lead to increased demand for the basic commodities of consumption and push up costs of living still further.

40. From this point of view it is important to stress that the scope for deficit financing is intimately bound up with the policy regarding physical controls. If the supply and distribution of foodgrains, and other essential commodities such as cloth and gur or sugar, could be so organised as to meet the minimum requirements of the population, the dangers of deficit financing would to that extent be minimised. The impact of larger money incomes would then fall on other commodities and services which matter less from the point of view of the cost of living of the large majority of the people. Without a firm and clear policy regarding controls, and without also assurance of continuity in that policy over a period of time, not only does the scope for deficit financing become limited but there is a perpetual danger of even relatively small budgetary deficits generating inflationary pressures. In this sense, therefore, it is not finance as such which limits the scale of investment effort but rather the limitations of policy and administration regarding the supply and distribution of foodgrains and other essential commodities.

*The sterling balances do not form part of the reserves of the Central Government; they are the counterpart of savings forced on the community at large during the last war, and are held by the Reserve Bank as the country's foreign exchange reserve and backing to the currency.

IV. External Resources and the Problem of Foreign Exchange

The gap in internal resources

41. The low levels of consumption prevailing in the country and the shortages of essential commodities even at these low levels—which are ultimately the factors that limit the scope for deficit financing—raise in a concrete form the problem of external assistance in relation to development. It was indicated earlier in this chapter that a development programme of the order of Rs. 2,069 crores would absorb over 60 per cent of the savings of the community in this period. Part of the pressure this throws on the economy will be met by resources which withdrawals from the sterling balances will make available. There would still be need, however, for further external resources.

42. To date, the loans and grants received by India from abroad in the planning period, which could be used for its development programme, amounts to Rs. 156 crores. The breakdown of this is as follows :

	(Rs. crores)
United States Food Loan	90
Commonwealth Assistance under the Colombo Plan	12
Assistance under the Technical Co-operation Agreement, 1952	25
Assistance under the First Supplement to the Technical Co-operation Agreement, 1952.	18
Proceeds of Loans from International Bank 1950	9
Other aid	2
	156

The budgetary resources of the Central and State Governments, together with external assistance already received, thus add up to Rs. 1414 crores. If deficit financing is to be avoided altogether, and the additional imports which can be financed from the sterling balances are to be allowed to increase the availabilities in the private sector, the further resources necessary may be placed at Rs. 655 crores. If resources of this order are forthcoming, this, together with the sterling balances and the current domestic savings which are estimated to go up meanwhile by nearly 50 per cent will ensure the implementation of a total investment programme of the order of about Rs. 3500—3600 crores (of which about a half will be the net investment visualised in the public sector) without excessive strain on the community. Whatever austerity the country is capable of has to be exercised in any case, but to the extent that the availability of external resources falls short of the target the strain imposed on the community will have to be correspondingly larger.

Foreign exchange requirements and foreign exchange savings

43. The internal pressures to which we have been referring are apt to manifest themselves to a great extent in balance of payments difficulties and shortages of foreign exchange. External assistance, if available, would thus serve two functions simultaneously ; it would

make available adequate supplies of foreign exchange and also supplement the investible resources in the country. In the schemes included in the Five Year Plan itself, the direct foreign exchange expenditure involved is comparatively small, being only about Rs. 400 crores over the five year period. But this does not represent the real foreign exchange requirements of the development programme for the economy taken as a whole. The relatively small proportion of direct foreign exchange expenditure in the Plan is attributable to the pattern of development proposed to be initiated by the public sector in this period. If industrialisation were more prominent in the public development programme the proportion of direct foreign exchange expenditure would have been considerably higher. The emphasis on agriculture, together with the general bias in favour of labour intensive methods in order to utilise the manpower in the country to the maximum, accounts for the greater reliance on domestically available resources as far as the Plan itself is concerned. But the fact that most of the expenditure is internal and would expand domestic incomes which would, in turn, generate additional demand for raw materials and basic commodities of consumption, makes it essential to make available these commodities by importation from abroad in so far as additional supplies are not forthcoming domestically. To the extent that the prices of imported commodities are higher than the prices at which the cost of the Plan is estimated, the external resources necessary for meeting the deficit in the Plan will of course be correspondingly larger.

44. Balance of payments difficulties and shortage of foreign exchange resources are normal features in periods of development. In the Plan, a high priority is accorded to lines of production which will help to reduce import requirements and increase the country's exportable surpluses. There is thus an attempt to anticipate and meet to some extent the kind of problem that is likely to come up in the future. The fact remains, however, that development cannot be completed in a short period, and it will therefore be necessary to visualise a programme of rising capital goods imports for many years to come.

45. For assessing the effect of the Plan on the balance of payments of the country, we have assumed the maintenance of strict import and export controls throughout the period of the Plan, and tried to estimate the export surpluses and import requirements by 1955-56 on the basis of the production and consumption targets in the Plan. An important variable, however, which would affect export surpluses and import requirements is the level of investment itself in the country ; for the purpose of making a first assessment, we have assumed a rate of outlay corresponding to a development expenditure on public account of the order of Rs. 1700 crores (*i.e.*, an expenditure which could be more or less met from the budgetary resources of the Central and State Governments, deficit-financing to the extent of about Rs. 290 crores, and the external assistance already received). A higher rate of outlay, corresponding to the target of Rs. 2069 crores in the Plan is not likely to make a proportional contribution to production within this period, as the additional expenditure would be mainly on schemes started in the second half of the Plan period which would not be completed in this period ; but it would increase to some extent the direct foreign exchange requirements of the development programme and, even more significantly, the level

of consumption demand in the country. With more purchasing power injected into the system the demand for food, for instance, may be higher. It is difficult, however, to forecast with any certainty the likely pressures that may be set up in this manner, and we have therefore left over for the present—but to be taken account of at a later stage—the effect on import requirements and export surpluses of a rate of a development expenditure corresponding to the target of Rs. 2069 crores in the Plan. Statement 'A' attached at the end of this chapter shows our estimates of the exports and imports, by the end of the Plan of some of the major commodities entering India's foreign trade. These estimates are based on the production and consumption targets in the Plan, but assume the maintenance of strict export and import controls in order to maintain the foreign exchange deficit within the resources that would be available from the sterling balances. It will be seen that, at the prices prevailing in 1950-51 and in respect of the group of commodities shown, the increase in foreign exchange earnings by the end of the Plan due to higher exports and reduced imports would amount to nearly Rs. 133 crores. This would however be offset to the extent of nearly Rs. 108 crores through decreases in the volume of exports and increases in the volume of imports required in order to attain the higher targets of internal production and consumption visualised in the Plan. The net improvement in foreign exchange earnings thus works out to roughly Rs. 25 crores. This estimate does not cover the foreign exchange savings from the opening of the projected oil refineries and from the expansion of certain newly-developing lines of exports to countries in South East Asia ; on the other hand, it does not also include foreign exchange required for additional imports of machinery, equipment and certain metals needed to maintain the high levels of investment visualised towards the closing stages of the Plan. On balance, taking all items into account, there might not be any significant net improvement in the foreign exchange position as compared to 1950-51.

Likely movements in terms of trade and their effects

46. Considering that there was a surplus in balance of payments in 1950-51, this order of improvement on that base would suggest a fairly comfortable foreign exchange position by the end of the Plan. There are however a number of imponderables here, and the most important of them is the likely movement in the terms of trade. In the last few decades there have been considerable changes in India's terms of trade. Between 1938-39 and 1948-49, there was a movement in India's favour to the extent of about 15 per cent, which appears to have cancelled out roughly the deterioration which took place in the previous decade. Between 1948-49 and 1950-51, on account of external factors, there was a sharp improvement in India's terms of trade to the extent of about 22 per cent. The large surplus in balance of payments in 1950-51 was thus fortuitous. After July 1951 there was an equally sharp deterioration ; by April 1952 the terms of trade had returned to the 1948-49 level, and since then they have tended to worsen further. Although one cannot generalise on the basis of short period trends, it would appear that, on a long view, any improvement in terms of trade over the 1948-49 level is likely at best to be of a temporary character, and that in fact the terms of trade might become more unfavourable to India to the extent of about 10 per cent.

47. At the 1948-49 terms of trade, India is likely to have a deficit in its balance of payments at the end of the Plan despite the net improvement referred to earlier. There would meanwhile have been, however, considerable increases in the availabilities of certain commodities in conformity with the targets in the Plan, and in the event of difficulties in balance of payments it will be possible, in an emergency, to draw on them for balancing the country's external accounts.

Foreign exchange deficits and balance of payments policy during the Plan

48. The calculations made above rest on the assumption of strict import and export controls and a public development programme of the order of Rs. 1700 crores. If, as is intended, the target level of Rs. 2069 crores is to be reached without pressure on consumption standards and on economic activity in the private sector, imports of some commodities will have to be increased and exports of some reduced. We shall have to provide not only for more food and raw materials to meet the additional demands generated by the expenditure but also for additional machinery, equipment and other producer goods. The precise effect this will have on the foreign exchange position of the country cannot be forecast at this stage, but a deficit of about Rs. 180-200 crores per annum in balance of payments seems likely and even necessary in the remaining years of the Plan. About Rs. 50 crores of the balance of payments deficits in this period could be financed each year from the sterling releases, but the ability to meet deficits in excess of this will depend to a great extent on the availability of additional external assistance. In the last analysis, the role of external assistance in relation to the Plan will be to supplement the real resources of the country with commodities for which additional demands will be generated in the process of development but the domestic supplies of which are limited. External assistance would help to avoid dislocations and to maintain a certain measure of stability in the economy. It follows that, for a balance of payments policy which is integrated with the overall requirements of planned development, it is necessary that external assistance is received in a form which allows flexibility in the use of the foreign exchange resources provided by it.

49. We should perhaps emphasise here that balance of payments difficulties are an inevitable aspect of development at this stage. Since the development of an economy like that of India requires initially imports on a large scale of machinery, capital equipment and other producer goods as well as of consumer goods like foodgrains, foreign exchange is bound to be a bottleneck for some time to come. In fact the degree of the pressure on foreign exchange under these conditions may be even regarded as an index of the extent to which the internal productive resources are being utilised. What has to be ensured is, on the one hand, that the development programme is so framed as to increase the potential exportable surpluses and decrease the import requirements of the country and, on the other, that the pressure on foreign exchange is kept within manageable limits. Apart from external factors, the actual deficits in balance of payments will depend to a great extent not only on the investment levels which are sought to be reached but also on the rate at which consumption in the country is allowed to rise from year to year.

V. The Problem of Mobilising Financial and Physical Resources

50. The above assessment of resources, it will be seen, has been done largely in financial terms. This has been to some extent inevitable in that the Plan is a programme of development to be implemented by the Central and State Governments out of the budgetary resources likely to be available to them. But an attempt has also been made to estimate the total investment on private and public accounts that is likely to take place in this period and to assess the capacity of the country to divert resources of this order into capital formation. In view of the limited statistical data available, and also in view of the various complexities involved in forecasting the likely effects of particular rates of investment, the assessment has had to be, by necessity, a rough and ready one. The scope for increasing investment expenditure has been considered broadly with reference to the supply and demand conditions of certain commodities which either figure largely in the pattern of consumption and investment of the community or enter the country's foreign trade and might conceivably lead to bottlenecks. As we have stressed earlier, it is not finance as such which limits the rate of investment. For instance, the scope for deficit financing is intimately bound up with efficient organisation of the supply and distribution of essential commodities ; if the supply and distribution of these improve, either through improvements in organisation or for reasons that we are not able to foresee now, to that extent it might become possible to step up the rate of development expenditure in the future. In other words, though the assessment of resources has been presented in financial terms, the approach is basically in terms of physical resources. It is important that a programme which aims at using the resources of the country to the maximum extent possible should be conceived of and translated back at every stage in terms of the various types of physical resources needed for its implementation.

51. Among the unutilised resources of the country, manpower is undoubtedly one of the most important. In Chapter I we have referred at some length to the problem of utilising under-employed manpower for the development programme. It was pointed out there that unless productivity of labour could be raised quickly and the availability of basic essentials like foodgrains increased, a programme of full employment, designed to put to work all idle labour, would run the risk of breaking down on account of excessive pressure of money incomes on available supplies. Two conclusions were drawn from this : first, that in promoting higher levels of employment it was important to ensure that the newly mobilised labour would be able to raise total output with the shortest possible time lag; and second, that in the initial stages of development reliance will have to be placed as far as possible on voluntary labour, money being used mainly as a means of attracting and organising such labour. Both these have been kept in view in framing the programme of development for this five year period. In the programme for agriculture, there is considerable emphasis on quickly maturing forms of investment ; the consequent increase in food supplies is designed to remove one of the major bottlenecks to embarking on a programme of fuller mobilisation of manpower resources. The Plan also visualises using finance, wherever possible, as a means of attracting and organising under-utilised manpower and other

resources. The community development programme is an instance in point. There is also provision in the Plan for assistance to local authorities in respect of schemes for which local effort is forthcoming. Famine relief works, it is visualised, will be so arranged in future as to fit in with the larger needs of development. Minor irrigation projects are another field in which mobilisation of local manpower could contribute considerably to the lowering of costs. For reducing the monetary outlay on development, the possibilities of paying part of the wages and salaries in the form of savings certificates could be explored with advantage.

52. While it is necessary to progress in these ways towards fuller utilisation of the large unutilised manpower resources in the country, it is also necessary to strengthen the financial mechanism behind planning. Finance is not only a means of accounting ; it is also a potent instrument for directing resources along desired lines. A necessary condition of the public sector playing an increasingly important part in development is that there should be such organisational changes in the financial system as will enable the public authorities to have command over the necessary resources. In the earlier sections of this chapter, we have referred at various points to the potentialities of increasing the budgetary resources of the Central and State Governments. These potentialities have to be explored to the full. The increase in budgetary resources would have to come to a considerable degree from additional tax revenues ; to emphasise that these should as far as possible be through widening the coverage of taxation is not to deny that, in the mass effort which is needed for development, considerations of equality in sacrifice would require to some extent further additions to the direct taxation of higher incomes. In regard to borrowing, there is particularly scope for improvement in techniques. As we have mentioned earlier, it is important that, with the country embarking on a long term programme of development, techniques of borrowing are so adapted as to bring home to the people the larger purposes for which the loans are required and also to give the greatest possible scope for their direct participation in the financing and implementation of the various development programmes.

53. The progress of the small savings movement in recent years suggests that, with suitable adaptation to the preferences of different sections of the community and with a system of collection which will reach the farthest parts of the country, the savings of the lower income groups could become a growing source of finance for development. On an experimental basis, certain improvements in the facilities provided by the Post Office Savings Bank are to be shortly introduced in the Bombay State. These include :

(*a*) introducing the cheque system both for withdrawals and deposits ;

(*b*) affording greater facilities to the depositors by organising the working of the Bank on the lines of commercial banks ; and

(*c*) opening branches in a larger number of rural post offices.

The extension of these facilities to other States on the basis of the results of this experiment is likely to attract substantially more savings to the public sector in the next few years. Meanwhile, other methods of increasing small savings will also have to be explored.

54. Insurance has been in all countries a stimulus to, as well as an important channel for, private savings; it has therefore to be organised in India to fulfil its legitimate function in development. The precise steps to be taken in enlarging State participation in this sphere is a matter for closer examination. Apart from other measures which might be considered, the Government has in the Post Office Insurance Fund a medium even now for entering the field in a more active way than hitherto. Institution of provident funds is another method open for encouraging and mobilising savings on a large scale. The extension of this system recently to cover workers in six major industries indicates a direction in which more progress must be made.

55. Organisational changes along these lines will not only act as a powerful lever in the initial stages of development but will contribute to greater self-reliance in the further stages of this process. Parallel changes will be necessary also in other spheres to increase the supply of technical, managerial, and administrative resources in the country. The problems arising in this connection have been referred to elsewhere in this Report.

Statement 'A'—Production, Imports and Exports of Certain Major Commodities Entering India's Foreign Trade (referred to in para. 45)

Name of Commodity	PRODUCTION		IMPORTS*				EXPORTS*			
			Quantity		Value (Rs. crores)		Quantity		Value (Rs. crores)	
	1950-51	1955-56	1950-51	1955-56	1950-51	1955-56	1950-51	1955-56	1950-51	1955-56
1	2	3	4	5	6	7	8	9	10	11
Raw Cotton (Lakh bales) .	29·7	42·2	12·3	12·0	106·8	98·3	0·8	1·3	7·1	11·5
Raw Jute (Lakh bales) . .	33·0	53·9†	18·8	8·1	27·6	11·9	...	...	...	...
Oil Seeds (Lakh tons) . .	51·0	55·0	0·4	...	2·1	...	2·0	0·5‡	17·0	4·2
Sugar (Lakh tons)	11·2	15·0	0·6	...	5 3	...	·03	0·1	0·1	·5
Food grains (Million tons) .	54·0§	61·6	2·1	3·0¶	80·6	115·0	...	...	...	...
Cotton Manufactures :										
Yarn (Million lbs.) . .	1179·0	1640·0	0·5	...	0·3	...	74·5	10·0	17·1	2·3
Mill Cloth (Million yards) . .	3718·0	4700·0	5·7	1·0	1·3	0·2	1283·0	1000·0	117·9	91·9
Hand loom (Million yards) . .	810·0	1700·0								
Jute Manufactures (Lakh tons) . .	8·9	12·0	...	...	...	...	6·5	10·0	137·8	212·0

Name of Commodity	Production		Imports*				Exports*			
			Quantity		Value (Rs. crores)		Quantity		Value (Rs. crores)	
	1950-51	1955-56	1950-51	1955-56	1950-51	1955-56	1950-51	1955-56	1950-51	1955-56
1	2	3	4	5	6	7	8	9	10	11
Coal (Million tons) . .	32·0	38·0	...	...	...	...	1·0	3·0	3·4	10·2
Pig iron (Lakh tons)‖ . .	3·5	6·6	...	...	...	...	...	...	...	...
Steel (Lakh tons) .	10·0	13·7	2·8	5·0	21·7	38·4	...	...	...	...
Fertilisers :										
Ammonium Sulphate (Lakh tons) . .	0·5	4·5	3·7	1·5	11·4	4·6	...	...	...	...
Other (Lakh tons) . .	0·6	1·8	0·7	0·2	0·9	0·3	...	...	...	...
Oils (Lakh tons) . .	11·2**	13·0	0·2	0·4	3·3	6·6	1·2	1·7	23·0	32·5
Cement (Lakh tons) . .	26·9	48·0	0·1	...	0·2	...	0·3	3·0	0·3	3·6

*Value of imports and exports in 1955-56 is estimated at 1950-51 prices. Value of exports includes export duty.

†Exclusive of the production of mesta.

‡The fall in the exports of oilseeds will be to a large extent compensated for by the increase in the exports of oil.

§Production in 1950-51 was 52·7 million tons; the targeted increase in the period of the Plan is over the 1949-50 level when the production was 54·0 million tons.

¶It is difficult to forecast the precise requirements by way of food imports by the end of the Plan as they will have to be adjusted from time to time to the level of investment outlay in the country and the pressures it tends to generate. Provisionally it has been assumed that about 3 million tons food grains would have to be imported every year in the period of the Plan.

‖Refers to the quantity of pig iron available for the foundries *i.e.*, the quantity available over and above what has been consumed in the manufacture of steel.

**Production in 1950-51 has been assumed to be the same as in 1949-50.

CHAPTER IV

THE FIVE YEAR PLAN IN OUTLINE

The Five Year Plan involves an outlay on development by public authorities of Rs. 2069 crores over the period of 1951—56. In determining this target of expenditure, the main considerations that have been taken into account are : (1) the need for initiating a process of development that will form the basis of the much larger effort needed in the future ; (2) the total resources likely to be available to the country for the purpose of development ; (3) the close relationship between the rates of development and the requirements of resources in the public and in the private sectors ; (4) the necessity of completing the schemes of development initiated by the Central and State Governments prior to the commencement of the Plan ; and (5) the need to correct the maladjustments in the economy caused by the war and the partition.

2. Our approach to planning and the long-term targets of investment and income to be aimed at have been set forth in the earlier chapters. The vast and complex problems of structural and institutional re-organisation that an effort of the required magnitude will raise have also been touched upon. Viewed against this background, the Five Year Plan is essentially a plan of preparation for laying the foundation for more rapid development in the future. The targets of investment which the Plan sets, as well as the increases in production which are expected to be achieved thereby, are modest when compared to what has to be achieved within the next twenty years or so but, it must be emphasised, both are high compared to past trends.

Priorities and the Pattern of Outlay

3. The distribution of expenditure in the development programme of the public sector is summarised in the following table :

	Rs. crores	Per cent of total
Agriculture and Community Development	361	17·5
Irrigation	168	8·1
Multi-purpose Irrigation and Power Projects	266	12·9
Power	127	6·1
Transport and Communications	497	24·0
Industry	173	8·4
Social Services	340	16·4
Rehabilitation	85	4·1
Others	52	2·5
	2069	100·0

This distribution reflects the priorities discussed in Chapter II. In the present Plan period, agricultural development receives the highest precedence, which necessitates an extensive programme of irrigation covering minor as well as major projects. Generation of

electric power, which is linked in most cases with the major irrigation projects, has also a high priority in its own right. Production and extensive distribution of electrical energy on a large scale is essential not only for the growth of small scale enterprises and for rural development in the larger sense of the term but for industrial expansion. In regard to transport, public authorities have a special responsibility. The railways are a nationalised enterprise which has to respond to the needs of development in both argiculture and industry. The State has further to take the initiative in linking up the whole country through a system of roads reaching down to the village, and in promoting development in new lines like shipping and aviation.

4. The high priority given to agriculture (which as mentioned above, involves large scale investment in irrigation) as well as to basic services like power and transportation limits inevitably the investment which the public sector can itself undertake in industries. Industrial expansion in this five year period will rest largely on private initiative and resources, but they will be supplemented at certain points by the resources of the public sector as well as by foreign investment; programmes of the public and the private sectors together will not therefore be inconsiderable. In the sphere of social services, the needs are so large that what can be achieved through financial investment by public authorities is limited. In the present Plan, the rehabilitation of displaced persons absorbs a considerable proportion of the additional resources available for expansion of social services. The financial investment in social services has to be supplemented by direct community effort on a large scale for the liquidation of illiteracy, improvement of sanitation and hygiene, development of civic services, imparting of elementary technical training, etc. The lump-sum provisions in the Plan for the community development programme and for local works are designed, among other things, to evoke such community effort.

5. The significance of the outlay of Rs. 2,069 crores from the point of view of the additions it will make to productive equipment in the public and private sectors, and to the production potential of the community in the larger sense of the term, will perhaps be clearer from the following rough classification :

	(Rs. crores)
(1) Outlay which will add to the stock of productive capital owned by Central and State Governments	1,199
(2) Outlay which will contribute to building up productive capital in the private sector—	
(*i*) Expenditure on agriculture and rural development (excluding community projects and provision for scarcity affected areas)	244
(*ii*) Loans for transport and industry	47
(*iii*) Provision for stimulating local development (community projects and local works)	105
(3) Outlay on social capital	425
(4) Outlay unclassified above (including provision for scarcity affected areas)	49
TOTAL	2,069

It will be seen that nearly 60 per cent. of the planned outlay will result directly in the creation of productive capital in the ownership of the Central and State Governments ; this will be mainly under irrigation and power, transport and communications, and industry. The remaining 40 per cent will partly add to productive equipment in the private sector, partly provide assistance in the form of working capital or of advisory and administrative services, partly help to maintain and expand social services, and partly act as an incentive for community effort in development.

Distribution and Phasing of Expenditure

6. A break-up of the development expenditure of the Central and State Governments by major categories is given in the statements attached at the end of this Chapter. The distribution of the total outlay as between the Central and the State Governments is summarised below :—

	(Rs. crores)
Central Government (including railways)	1,241
States : Part A	610
Part B	173
Part C	32
Jammu and Kashmir	13
TOTAL	2,069

7. According to the above classification, the outlay of the Central Government (including the railways) works out to almost 60 per cent. of the total. It must be emphasised that this distribution of outlay is not an indication of the schemes which fall within the respective spheres of the Centre and the States. The 'central' multi-purpose river valley schemes (*i.e.*, the Damodar Valley, Bhakra-Nangal, Hirakud, and Harike projects) are really the schemes of the State Governments, but in view of the fact that the territorial coverage of these projects extends in some cases over two or three States, the exact distribution of the financial liability as between them cannot be foreseen at this stage. The responsibility of finding the necessary finance for these schemes in the form of loans to State Governments also rests initially on the Centre. In regard to certain other schemes, the sharing of the financial responsibility has yet to be finally determined. For these and similar reasons the provisions in the Plan for community projects, minor irrigation and other local works, the five new major irrigation and power projects, scarcity affected areas, rehabilitation of displaced persons, basic and social education, industrial housing, etc., are shown as part of the Central Government's development programme, though they belong primarily to the States.

8. It is in the light of these observations that the distribution of the total planned outlay as between the Centre and the States, and the allocation of this outlay as between the major developmental heads, has to be seen. The following table summarises the outlay of the Centre and of the States (excluding Jammu and Kashmir) under various heads :

(Rs. crores)

	Centre	Part A	Part B	Part C
Agriculture and Community Development	186·3	127·3	37·6	8·7
Irrigation and Power	265·9	206·1	81·5	3·5
Transport and Communications . .	409·5	56·5	17·4	8·8
Industry	146·7	17·9	7·1	0·5
Social Services including Rehabilitation .	191·4	192·3	28·9	10·4
Miscellaneous	40·7	10·0	0·7	...
TOTAL	1240·5	610·1	173·2	31·9

9. The outlay proposed in the development programmes of States other than Jammu and Kashmir is shown below :

State Plans

(Rs. crores)

PART A STATES		PART B STATES		PART C STATES	
Assam . .	17·49	Hyderabad . .	41·55	Ajmer . .	1·57
Bihar . .	57·29	Madhya Bharat .	22·42	Bhopal . .	3·90
Bombay .	146·44	Mysore . . .	36·60	Bilaspur .	0·57
Madhya Pradesh	43·08	Pepsu . . .	8·14	Coorg . . .	0·73
Madras . .	140·84	Rajasthan . .	16·82	Delhi .	7·48
Orissa . .	17·84	Saurashtra . .	20·41	Himachal Pradesh	4·55
Punjab . .	20·21	Travancore-Cochin	27·32	Kutch . .	3·05
Uttar Pradesh	97·83			Manipur	1·55
W. Bengal .	69·10			Tripura .	2·07
				Vindhya Pradesh	6·39
TOTAL .	610·12	TOTAL	173·26	TOTAL	31·86

These State Plans were drawn up initially over a year ago in consultation with the State Governments concerned and on the basis of forecasts supplied by them regarding their likely revenues and expenditures in the period of the Plan. In cases where the State Governments made proposals subsequently to raise the size of their State Plans, the upward revisions have been accepted provisionally subject to the resources corresponding to them being raised by the governments concerned.

10. The financial basis of the Plan has been discussed in detail in Chapter III. A rough picture of the estimates in relation to the development programmes can be had from the following summary table :

(Rs. crores)

	Central Government	States (including Jammu and Kashmir)	Total
Planned Outlay on Development . .	1,241	828	2,069
Budgetary Resources—			
(*i*) Savings from current revenues . .	330	408	738
(*ii*) Capital receipts (excluding withdrawals from reserves)	396	124	520
(*iii*) Internal inter-governmental transfers in connection with the Plan (*i.e.*, "Central assistance") . .	(—) 229*	229*	...
	497	761	1,258
External Resources already received . .	156	...	156
TOTAL .	653	761	1,414

As brought out in the assessment of financial resources for the Plan, the balance of Rs. 655 crores necessary for the public development programme will have to be found from further external resources that may be forthcoming or from internal taxation and borrowing as far as possible and by deficit-financing.

11. In the phasing of development expenditures originally proposed by many of the States there was on the whole a somewhat excessive concentration of outlay in the first two years of the Plan. This was in some cases inevitable in that it only reflected the rising tempo of expenditures towards the culminating stages of certain schemes already under implementation. The actual progress of expenditure (as indicated by the revised budgets for 1951-52 and the budget estimates for 1952-53) shows that the concentration of expenditures in the first two years originally proposed has already been corrected to a great extent. It is, however, clear that in 1953-54 expenditures on a number of schemes under implementation will reach their peak levels and that there would be in consequense a heavy pressure on resources both at the Centre and at the States. New schemes which can be postponed without detriment should not therefore be taken up in this year. In so far as can be foreseen at this stage, there will be scope for starting work on new schemes, which involve large expenditures once they are undertaken, only towards 1954-55 and in 1955-56.

* Includes Rs. 4 crores by way of statutory grants for scheduled tribes which will be available for part of the development expenditure on scheduled tribes in the Assam State Plan.

APPRAISAL OF THE PROGRAMME IN THE PLAN

12. In appraising the results of the Plan, the development programme in the public sector cannot be taken by itself. This progamme, as mentioned earlier, is based on an appraisal of the needs of the economy as a whole and is related to an assessment of the effort that is likely to be forthcoming from the private sector. In the case of agriculture, where the problem is primarily one of providing irrigation, fertilisers and manures, better seeds, as well as extension services which will carry to the farmer the know-how of technical improvements, the supplemental investment required would to a great extent be in the form of direct contributions of labour by the farmers themselves. In the sphere of industrial development, we have taken into account the working plans of 40 large and medium scale industries which cover about two-thirds of the total output of factory enterprises in the country. Approximate estimates regarding the likely requirements of manufacturing industries and of the likely sources of finance are shown elsewhere in this Report. The results of the Plan can thus be viewed within a wider setting as far as agriculture and manufacturing industry are concerned. In other spheres of development, particularly in respect of professions and services and small-scale enterprises in transport and industry, only broad judgements can be made at this stage. The contribution that community effort may make to extension of education, sanitation, communications, etc. cannot also be assessed in advance in precise terms. In the paragraphs that follow are outlined the salient features of the development programmes in the public and private sectors ; their results in terms of certain select targets and indices are shown in the statement below :—

	1950-51	1955-56
I. *Agriculture*		
Foodgrains* (million tons)	52·7	61·6
Cotton (lakh bales)	29·7	42·2
Jute (lakh bales)	33·0	53·9
Sugarcane (million tons)	5·6	6·3
Oilseeds (million tons)	5·1	5·5
II. *Irrigation and Power*		
Major irrigation (million acres) Minor irrigation (million acres)	50·0	69·7
Electrical energy (installed capacity in million kws)	2·3	3·5
III. *Industry*		
Iron and Steel (lakh tons)		
Pig iron available for foundries	3·5	6·6
Finished Steel	9·8	13·7
Cement (lakh tons)	26·9	48·0
Aluminium (thousand tons)	3·7	12·0

* Including gram and pulses. Output in 1949-50 (used as the base for fixing the target for 1955-56) was 54.0 million tons.

	1950-51	1955-56
Fertilisers (thousand tons)		
Ammonium sulphate	46·3	450·0
Superphosphate	55·1	180·0
Locomotives (Nos.)	...	150·0
Machine tools (Nos. in thousands)	1.1	4.6
Petroleum refining		
Liquid petroleum (million gallons)	N. A.	403·0
Bitumen (thousand tons)	N. A.	37·5
Cotton manufactures		
Yarn (million lbs.)	1179	1640
Mill cloth (million yards)	3718	5000
Handloom (million yards)	810	1700
Jute manufactures (thousand tons)	892	1000
Agricultural machinery		
(*a*) Pumps, powerdriven (thousands)	34·3	85·0
(*b*) Diesel engines (thousands)	5·5	50·0
Bicycles (thousands)	101·0	530·0
Power alcohol (million gallons)	4·7	18·0
IV. *Transport*		
Shipping (tonnage)		
Coastal (GRT thousands)	211·0	315·0
Overseas (GRT thousands)	173·5	283·0
Roads		
National Highways (thousand miles)	11·9	12·5
State Roads (thousand miles)	17·6	20·6
V. *Education**		
Pupils in :		
Primary schools (lakhs)	151·1	187·9
Junior Basic schools (lakhs)	29·0	52·8
Secondary schools (lakhs)	43·9	57·8
Industrial schools (thousands)	14·8	21·8
Other technical and vocational training schools (thousands)	26·7	43·6
VI. *Health*		
Hospitals (beds in thousands)	106·5	117·2
Dispensaries (number)		
Urban	1358	1615
Rural	5229	5840

*These estimates do not cover (except in respect of industrial schools), Hyderabad, Rajasthan, Ajmer and Vindhya Pradesh. In some cases, data for a few States (*e. g.*, Uttar Pradesh in respect of primary schools and Madhya Pradesh in the case of junior basic, and secondary schools) are also not covered in these estimates.

VII. *Developmental Institutions*

Panchayats (thousands)	55·1	69·1
Co-operative societies*		
Credit (thousands)	87·8	112·5
Sale and marketing (thousands)	14·7	20·7
Multipurpose (thousands)	31·5	40·5
Lift irrigation (Nos.)	192·0	514·0
Co-operative farming (Nos.)	352·0	975·0
Others (thousands)	27·3	35·8
Total (thousands)	161·9	211·1

Agriculture and Community Development

13. Agriculture and community development is a comprehensive description for several items of reconstruction which include, besides agricultural production, livestock improvement and dairying, forests and soil conservation, co-operation and village panchayats. The Plan makes a total provision of about Rs. 361 crores of which Rs. 184 crores is for agriculture, a little over Rs. 100 crores for community projects and rural development, Rs. 22 crores for animal husbandry and dairying, Rs. 15 crores for stimulating local development through the agency of local authorities, another Rs. 15 crores for development programmes in scarcity-affected areas, and Rs. 12 crores for forests and soil conservation. The role of the Central Government is to co-ordinate the programmes of the States and also to assist them in certain important respects. The Central Government's plan provides for the establishment of a national extension organisation, completion of the present programmes of the Central Tractor Organisation, schemes for the improvement of livestock, measures for soil conservation as well as for co-operative training, for experiments in co-operative farming and other aspects of co-operative organisation. The Technical Co-operation Programme initiated this year has strengthened considerably the programmes for tubewell development, marine fisheries, locust control and the training of extension workers.

14. The programme for increasing agricultural production covers foodgrains as well as cotton, jute, sugar-cane, and oilseeds. In foodgrains, the target for 1955-56 represents an increase of about 14 per cent over the level in 1949-50.† In the case of cotton and jute, production is expected to go up by over 42 per cent and 63 per cent respectively above the level in 1950-51, while the increases in sugar-cane and oilseeds are estimated at about 13 per cent and 8 per cent respectively. It might be mentioned here that, in 1951-52, the production of cotton was 33 lakh bales as compared to 29·7 lakh bales in 1950-51 and the target of 42·3 lakh bales by 1955-56. Jute production in 1951-52 was 47 lakh bales—an increase of 14 lakh bales over 1950-51; the additional production now to be secured in terms of the target works out therefore at only 7 lakh bales. Foodgrains production for 1951-52, as shown by official

*The estimates here exclude data for Punjab, Orissa, Hyderabad, Pepsu and most of the Part C States.

†Compared to 1950-51, when production was 1·3 tons lower, the percentage increase would be somewhat larger.

figures was about the same as in the previous year and it is here that special effort is now called for. The detailed programmes for achieving the food targets, formulated initially in 1950-51 in consultation with the State Governments, were reappraised in early 1952. Following this reappraisal the original target of 7·2 million tons in the State Plans had to be lowered to 6·0 million tons. The programmes have therefore been strengthened by an additional lump-sum provision of Rs. 30 crores for minor irrigation.

15. The community development projects, which are conceived primarily as a programme of intensive development of selected areas, would also contribute to raising the level of agricultural production. A beginning has been made this year with 55 projects. The central object of the community development programme is to mobilise local manpower for a concerted and co-ordinated effort at raising the whole level of rural life. The emphasis is inevitably on improving the level of agricultural productivity. This is reflected in the fact that the bulk of the projected expenditure is devoted to the provision of irrigation, land development and extension services. The community development projects represent in content a synthesis of ideas gathered from rural development work in various parts of the country. As further experience is gathered, changes in structure and emphasis may be necessary, but the intention is to cover the entire country with schemes designed to promote intensive development through increased agricultural productivity. The Five-Year Plan makes a lump-sum provision of Rs. 90 crores for such development. There is, in addition about Rs. 10 crores in the State Plans for other programmes of rural development, including schemes designed to promote and strengthen village panchayats.

16. Elsewhere in this Report is also a scheme for a national extension service for agricultural development ; there is provision of Rs. 3 crores for this in the Plan. This organisation, together with community development projects and the additional minor irrigation visualised, will help to step up the production of foodgrains in the country by 7·6 million tons compared to the level in 1949-50.

17. In the period of this Plan, some parts of the country may not stand to benefit directly from the various development schemes taken up. In order that the Plan creates interest on the part of as wide a section of the community as possible, and in order to draw forth local initiative and resources, a lump-sum provision of Rs. 15 crores is being made in the Plan for local development works. It is hoped that schemes will be forthcoming from municipalities, district and taluka boards and other local bodies for which financial assistance can be given out of this lump-sum provision to attract and organise local resources on a multiplied scale. There is also a special provision of Rs. 15 crores in the Plan for organising relief activities in scarcity-affected areas on developmental lines.

IRRIGATION AND POWER PROGRAMMES

18. The programme for irrigation and power is based primarily on projects initiated in the period prior to the Plan. The total cost on the projects thus taken over into the Plan has been estimated at Rs. 765 crores, of which an expenditure of Rs. 153 crores had already been

incurred up to the end of 1950-51. The provision for these projects in the period of the Plan is Rs. 518 crores, leaving only a little under Rs. 100 crores to be spent in the subsequent years. The progress made on these projects will help, within the period of the Plan, to bring an additional area of 8·5 million acres under irrigation and to generate 1·1 million kws of additional power. On the completion and full development of these projects, the total addition to the area irrigated will be 16·9 million acres and to power 1·4 million kws.

19. In view of the high priority given to agriculture, the construction of the projects in hand has been so adjusted as to facilitate the maximum extension of irrigation in this period. The generation of power has been related to the demand that already exists or is likely to grow in the near future. Provision is however being made in the design of dams and other works for installing additional units as and when additional demands rise.

20. Of the provision of Rs. 518 crores in the Plan on projects in progress, well over half will fall in the first three years of the Plan. During this period the pressure on financial as well as technical resources will prevent work being started on new projects. There will be scope for such additions only as from 1954-55. The five new irrigation and power projects which are proposed to be taken up towards the later stages of the Plan are the following: Kosi (Stage I), Koyna (Stage I), Krishna (the scope of which is not yet defined), Chambal (Stage I) and Rihand. The total cost of these projects will be well over Rs. 200 crores, out of which it is expected that it might be possible to spend Rs. 40 crores during the period of the Plan.

21. The programme for irrigation and power in the Plan,* taking projects in progress as well as the new projects proposed, has to be viewed as part of a more long-term programme intended to add, within the next two decades, 40-45 million acres to the area now under irrigation and 7 million kws. to the existing power generating capacity.

22. The irrigation and power benefits from the major projects in the period of the Plan will be supplemented by the results of the minor irrigation programme and by the extension schemes of private electricity undertakings. The minor irrigation programme in the Plan, involving an expenditure of Rs. 77 crores, is as follows:—

	Area benefited (million acres)
Dams and channels	4.4
New wells	1.1
Repairs and derelict wells	0.5
Tubewells (other than those included in the major irrigation programme)	0.7
Tanks	0.8
Pumping installations	0.7
Schemes in respect of the additional provision for minor irrigation	3.0
	11.2

*The Plan includes, in addition to the items mentioned, a provision of Rs. 2 crores for carrying out investigations into development possibilities in irrigation and power.

As regards power, the extension projects of private electricity undertakings will add 176,000 kws of installed capacity in the period of the Plan.

23. There are parts of the country in which scope exists for large irrigation projects and there are others in which only smaller projects are possible. Each area has to be served by the kind of schemes for which it offers the best facilities. Large and small projects are thus complementary and not competitive. The Plan includes eight irrigation projects (including multi-purpose projects but excluding new major irrigation projects mentioned in para 20) costing above Rs. 5 crores each, sixteen costing between Rs. 1 crore and Rs. 5 crores, twenty-one costing between Rs. 50 lakhs and Rs. 1 crore, and twenty-seven schemes costing between Rs. 10 lakhs and Rs. 50 lakhs.

24. Rural electrification has so far made little progress in the country, only 1 in about 200 villages being served with electricity. The Plan makes a provision of Rs. 27 crores for extending rural electrification. This programme is mainly confined to the Southern States of Madras, Mysore and Travancore-Cochin, but the scope for rural electrification will undoubtedly grow as more power becomes available in other areas of the country. Electricity will be useful not only for agricultural operations like pumping, but also for the processing of agricultural produce and for other cottage and small-scale industries in the villages. There is also a special advantage in the encouragement of agricultural load since utilization of power in agriculture is estimated to require only about one-third the investment required in industry. Moreover, most of the equipment required for utilization of power in agriculture can be produced in the country and its operation does not require technical skill of a high order.

INDUSTRIAL DEVELOPMENT

25. The expenditure on Industry, as shown in the development programmes of the public sector, is Rs. 173 crores ; this covers Rs. 140 crores to be spent on large-scale industries and ancillary transport expansion, Rs. 27 crores on cottage and small-scale industries, and about Rs. 6 crores on mineral development and scientific and industrial research. Some of the industrial schemes in the public sector are, however, shown under other heads. For instance, the Chittaranjan locomotive factory and the all-steel coach factory are part of the development plan for railways. The net investment in manufacturing industries figuring in the public development programme taken as a whole, but excluding a lump-sum provision of Rs. 50 crores for basic industries and transport (about which more will be said below), is Rs. 94 crores over the five years. Investment in the private sector on expansion of industries and on modernisation and replacement is likely to be of the order of Rs. 383 crores. The total investment on industrial development in this period can thus be placed at Rs. 477 crores.

26. The development programme in the public sector provides for a new iron and steel project estimated to cost Rs. 80 crores over a period of six years from the date of commencement ; the expenditure in the period of the Plan, estimated at Rs. 30 crores, is to be financed partly by Government and partly by private enterprise. Most of the industrial projects in

hand in the public sector will be completed by 1953-54. The Sindri fertiliser factory has commenced production and it is expected that it will shortly reach a monthly rate of output of 1,000 tons of ammonium sulphate. With the estimated production of 120 locomotives a year in the Chittaranjan locomotive factory by 1957 (production in 1955-56 will be 100 locomotives) and the estimated output of 50 locomotives at the Tata Locomotive and Engineering Company, the railways will be able to secure their normal annual replacement requirements of locomotives almost entirely from domestic production. The production of high precision machine-tools, telephone equipment, dry core cables, and newsprint envisaged in the Plan will also strengthen the industrial structure.

27. The rate of investment, and therefore of development in this sector as a whole, will depend however primarily on the implementation of the working plans of private industries outlined in this Report.* These plans, drawn up in consultation with the representatives of the industries concerned, aim at expanding the installed capacity of several capital and producer goods industries and, in the case of consumer goods industries, primarily at utilising more fully the existing capacity. Over the five-year period, the production of heavy chemicals is expected to go up by 156,000 tons, of fertilisers by 528,600 tons, of pig iron by 310,000 tons, of steel by 394,000 tons, and of cement by 2·1 million tons. The output of consumer goods industries is also estimated to increase considerably; the production of cloth is scheduled to go up by 1,872 million yards, of sugar by 384,000 tons, of salt by 429,000 tons and of vegetable oils by 182,000 tons. The output of a number of light engineering industries is also expected to register substantial improvement. It will be the objective of Government policy to assist the private sector to the extent possible in the creation and maintenance of conditions favourable to the attainment of the targets proposed.

28. As the development programme gets into swing and the emphasis is shifted increasingly towards industrialisation, it will become necessary to expand basic industries like iron and steel, heavy chemicals, manufacture of electrical equipment and the like. In these fields, as emphasised in Chapter II, it is necessary to anticipate to some extent the nature of the demands that will develop and make a beginning from the very start. The Plan therefore has a lump-sum provision of Rs. 50 crores for the development of basic industries and ancillary transport. This includes a provision for organising mineral exports. Part of the lump-sum provision of Rs. 50 crores, it is expected, will be available for initiating the construction of a unit for the manufacture of electrical equipment to meet the needs of power development in the country.

29. An extensive programme for village industries prepared primarily with the object of increasing rural employment has been included in the Plan. The programme includes, amongst others, the following industries: khadi, coir, village oil, matches, leather, hand-made paper, gur and khandsari, palm gur, woollen blankets and bee-keeping. The khadi programme is to be financed by means of a small cess on mill-made cloth. A small cess has also been proposed on mill oil for the benefit of the village oil industry. Common production programmes have been proposed for a number of cottage and small scale industries along with the

*These working plans are being published in a separate volume.

related large scale industries. For instance, as part of the programme for the textile industry the output of the handloom industry is expected to be doubled. The establishment of a Khadi and Village Industries Development Board by the Central Government is being recommended. The Board which will have large executive functions, is to be responsible for initiating village industry programmes in co-operation with State Governments and other organisations engaged in the field of village industries. The total provision in the Plan for cottage and small scale industries is Rs. 27 crores.

TRANSPORT AND COMMUNICATIONS

30. In the programme for Transport and Communications, a little more than half of the total outlay is on railways. This outlay is designed to meet the arrears in replacement accumulated over a long period (particularly during the War) and to equip the railways with the minimum equipment and installations necessary to carry the additional load which will be placed on it as a result of development in other sectors of the economy. At the beginning of 1951-52, about 12 per cent of the locomotives, 28 per cent of the coaches and over 10 per cent of the wagons in use were due for renewal ; to meet the existing level of traffic these had to be retained in service. Considerable lengths of the track were also in need of repair and restoration. The Plan provides for an expenditure of Rs. 50 crores per annum on railways in addition to Rs. 30 crores per annum estimated as required for meeting the current depreciation of railway installations and equipment. This will enable a few of the more urgent extensions to be undertaken, but the total provision for new lines over the five years is only about Rs. 20 crores and so the programme for railways must be regarded primarily as one of rehabilitation.

31. The total provision for road development in the Centre and the States together amounts to over Rs. 100 crores. Of this, about a quarter will be on the development of national highways, and the rest mainly on State roads. The provision for road development includes also a sum of Rs. 2 crores for the construction of the Ganga Bridge which will provide a needed link between North and South Bihar. Road development is a sphere which offers considerable scope for mobilisation of local manpower and local materials. In certain States, village roads are already being developed with the active co-operation of villagers who contribute a portion of the cost of construction by way of free labour, free gift of land or money, with the balance being contributed by State Governments or District Boards. With the projects for local and intensive development visualised in the Plan, it is estimated that approximately 16,000 to 17,000 miles of village roads could be constructed through community effort within this period. This mode of development has to be extended as rapidly as possible to cover the entire country.

32. As in the case of railways, ports are in need of attention to meet the immediate needs of expansion in other sectors of the economy. Apart from the fact that there is at present no reserve capacity in the five major ports of the country for handling normal increases in seaborne trade, port development is necessary to meet the following needs : (a) for rectifying the

consequences of Partition and for providing a natural outlet for the traffic previously catered for by Karachi ; (b) for the renovation and modernisation of equipment in the existing ports, and (c) for providing facilities for the petroleum refineries which are proposed to be set up. The Plan provides for Rs. 12 crores for the construction of a new port at Kandla, Rs. 8 crores for the creation of port facilities for oil refineries, and another Rs. 12 crores as loans to port authorities for carrying out a programme of rehabilitation and modernisation.

33. The Plan also visualises development in certain relatively new lines of transport, of which shipping is the most important. The programme for the development of shipping is designed primarily to enable the coastal trade of the country to be reserved for Indian vessels and to ensure their fuller participation in overseas trade. With these in view, the Plan makes provision for construction of additional berths in the Visakhapatnam shipyard, which will not only make available about 100,000 G.R.T. for coastal shipping during this period, but also help to reduce the costs of construction. In addition, there is provision in the Plan for loans to shipping companies for acquiring additional tonnage for overseas trade.

34. Civil aviation is another new line of development. It has been found that under the present conditions of traffic loads and intensity of operations, the existing air transport companies cannot work on an economic basis, and that to ensure such working they should merge into a single unit owned and operated by the Central Government. Integration of existing airlines along these lines has been decided upon and a State Corporation is to be set up for the purpose. It is proposed to give the shareholders of existing companies stock with guaranteed interest in return for their present holdings. The necessary legislation will be undertaken shortly. The Plan provides for a sum of Rs. 9·5 crores for purchase of new aircraft and for payment of compensation to existing air companies.

35. In the field of broadcasting, the new installations which are proposed to be taken up under the Plan would increase the area covered by medium wave broadcasts from 117,000 to 370,000 sq. miles. This would double the population covered by the broadcasting services, the population expected to be served by 1955-56 being of the order of 170 million people. Further, the development programme would also augment to a considerable extent the national and international services on shortwaves.

Social Services and Rehabilitation

36. The Plan provides for a total expenditure of Rs. 340 crores on social services of which Rs. 152 crores are for education, about Rs. 100 crores for medical and public health services, Rs. 49 crores for housing, Rs. 29 crores for backward classes (including scheduled castes and tribes), and nearly Rs. 7 crores for labour and labour welfare. There is a further provision of Rs. 4 crores for assistance to voluntary social welfare organisations so that their work can be expanded and dovetailed into the national development programme. In the States, the Plan contemplates only a limited measure of expansion in social services. At the Centre there is a provision of Rs. 20 crores for further development in the field of pre-university

education. The average annual expenditure proposed under education represents an increase of nearly 55 per cent over the development expenditure in 1950-51. This would lead to a certain amount of expansion of educational facilities in the States' sector. The number of pupils attending primary, junior basic, secondary and technical and vocational (other than industrial) schools is expected to increase by 25, 81, 32 and 63 per cent respectively as compared to 1950-51. In the sphere of health, the Centre has a programme for malaria control which will be co-ordinated with the programmes of the States ; the programme is intended to protect about 200 milion people in rural areas through insecticidal spraying measures. The Plan provides also for the construction of two D. D. T. plants in order to ensure sufficient supply of D. D. T. at reduced costs to meet the needs of the country. The State Plans provide for an expenditure on public health of Rs. 39 crores ; this expenditure, which will be mainly on provision of water supply and drainage, will involve almost a trebling of the existing rate of expenditure under this head. With the introduction of the scheme of provident funds for industrial workers in six industries, it has been possible to frame a programme for the construction of about 150,000 houses for industrial workers at a cost of about Rs. 38·5 crores. In addition, some States have their own housing schemes for low income groups ; the total cost of the housing programme is about Rs. 49 crores. The Plan has also a programme of amelioration for backward classes. In addition to the provision of Rs. 29 crores shown in the Plan, the Central Government is estimated to provide in the form of statutory grants a further sum of about Rs. 9 crores for the development of scheduled tribes. The programme for the rehabilitation of displaced persons, for which a provision of Rs. 85 crores has been made in the Plan, covers a period of three years ending 1953-54. The position regarding migrants across the eastern border is still somewhat fluid. For some time to come the problem of relief of those who have newly arrived may therefore continue to be a major concern of the Government.

Assessment of the Plan in Terms of Income and Employment

37. A programme of development will, in the last analysis, be judged in terms of the improvement it is able to make to the welfare of the community. The usual indices of welfare are income, consumption and employment. With the available data only a broad assessment of the Plan in these terms is possible. There are large gaps in the information available even on the existing position. National income statistics are still in their infancy. Little is known about the distribution of income and wealth in the country. Apart from a general picture derived from the Census returns, the data available on the occupational pattern are meagre. We do not also have sufficient knowledge of the relationships between the different sectors of the economy and how they interact on each other. In a period of development, the changes in all these are likely to be of great significance.

38. The national income of India in 1950-51 has been roughly estimated at Rs. 9,000 crores. As a result of the increases in production expected to materialise by the end of the Plan, the national income (at constant prices) is expected to go up to Rs. 10,000 crores, that is, by 11 per cent. The benefits of the investment outlays undertaken during the

period of the Plan will not be fully realised in this period. For instance, a considerable part of the additional irrigation and power facilities on account of schemes included in the Plan will appear only in the following quinquennium, though the greater part of the investment necessary will have taken place in the present Plan period.

39. To the extent that the community development projects, and the other schemes in the Plan designed to stimulate local initiative and resources, succeed in evoking community effort on a large scale, the increase in national income can be expected to be larger. In specific areas, direct application of manpower and other resources and concentrated efforts for increasing productivity could raise incomes by 25 per cent or more. The scale on which such effort can be organised will determine to a considerable degree, particularly in the countryside, the rate of development that will be achieved and the contribution it makes to the welfare of the community at large.

40. Out of the annual rate of increase of about 2 per cent in national income, about one-fifth will have to be, so to say, ploughed back into investment year after year in order to sustain the development programme at the rate visualised in the Plan. The aggregate consumption expenditure will therefore rise at a somewhat lower rate than the nationa income. Although the Plan will meet in this period only the most urgent needs of the people, for instance in the matter of food and clothing, it will have made a substantial addition to the production potential of the country.

41. In judging the likely effects of the Plan on employment, it is necessary to bear in mind that the problem in India is more one of underemployment rather than of unemployment as such. Underemployment is another facet of low productivity, which in turn is due to shortage of capital equipment and technical skill. The problem of removing under employment and of opening up employment opportunities for all at rising levels of real income is, therefore, in a sense, synonymous with the problem of development itself. The contribution that the Plan will make to the solution of the problem will be two-fold : firstly, in the process of stepping up the rate of investment it will create more employment for those engaged on construction activity, and, secondly, by building up capital at key points in the system, it will, at the next stage, enable a growing number of people to be absorbed into the productive system.

42. The Plan involves doubling the development expenditure of public authorities, from Rs. 232 crores in 1950-51 to nearly Rs. 500 crores by 1955-56 ; on a broad estimate about a half of this increase might be expected to be paid as so much additional wages and salaries. In the private sector, the largest investment activity is in residential construction. There are no data available on the volume of building activity in the country, but certain rough estimates, based on the allocations of materials like cement and steel and the cost of building covered by them, suggest that net private investment on constructions using these materials was probably of the order of Rs. 100 crores in 1950-51. Over the period of the Plan, the output of cement and steel is expected to go up by about 80 per cent and 40 per

cent respectively. No doubt, some of these increases will be absorbed by the development outlay of public authorities, but the additions to construction activity in the private sector which the larger output of cement and steel can sustain may still be considerable.

43. The secondary effects of investment on employment would take more time to show, but they are likely to be more impressive. This is particularly true in the earlier stages of industrialisation. In large scale industry, the emphasis in the Plan is on producer goods industries as far as expansion of installed capacity is concerned. Producer goods industries are highly capital-intensive, and the additional direct employment which the programme of industrialisation offers in this period would be correspondingly small. In agriculture, according to the Plan, benefits of irrigation will accrue to about 20 million acres of cultivable land in this period. Where perennial irrigation is provided, opportunities will develop for double cropping and this will help to reduce seasonal unemployment. In the rest of the agricultural sector, the provision of irrigation facilities, manures and seeds will raise productivity and increase incomes. The immediate employment effect of the higher incomes is not likely to be very pronounced, but as the trend of rising incomes establishes itself, effective demand will grow in the rural sector and widen employment opportunities in small scale industries as well as in services ancillary to commodity production. As mentioned in an earlier paragraph, the Plan incorporates several measures for the protection and expansion of small scale industries. These industries at present suffer from a variety of handicaps : inefficient techniques, lack of finance, difficulties in getting the necessary raw materials, inadequate marketing organisation, insufficient co-ordination with expansion in other sectors of industry, etc. Recommendations for improving these have been made in the relevant chapters in this Report. The principle of giving direct assistance to cottage and small-scale industries and, in suitable cases, of assuring them a field of operation sheltered from excessive competition in the period of transition has also been accepted.

44. The problem of increasing income and employment in an underdeveloped country is, in the last analysis, tied up with the larger problem of capital accumulation. The present Plan aims at raising domestic investible surpluses from the estimated level of Rs. 450 crores in 1950-51 to about Rs. 675 crores by 1955-56. It is the same factors which prevent the rate of capital accumulation from being stepped up further that also stand in the way of more rapid increases in income and employment. Basically, the solution lies in tapping the large investment potential which lies in the unutilised manpower and other resources in the country; this is a question of organisation. Changes in the institutional framework and the organisational measures recommended in this Report have from this point of view a vital significance.

STATEMENTS

Statement I—Development Expenditure Under the Plan: Centre and States

(Rs. lakhs)

Head	Total	Central Government	Part 'A' States	Part 'B' States	Jammu and Kashmir	Part 'C' States
1	2	3	4	5	6	7
I. Agriculture and Community Development—						
Agriculture	18422·2	5922·2	9108·2	2771·0	22·1	598·7
Veterinary and Animal Husbandry including Dairying	2228·5	412·9	1524·6	197·9	15·0	79·0
Forests	1169·5	200·0	599·8	224·7	10·0	135·0
Cooperation	711·2	50·0	491·7	125·2	..	44·3
Fisheries	464·1	50·5	332·5	72·9	..	8·2
Rural Development	1047·1	..	674·4	372·2	..	0·5
Community Projects	9000·0	9000·0	..	..	..	..
Local Works	1500·0	1500·0	..	..	..	..
Programme for Scarcity affected Areas	1500·0	1500·0	..	..	..	..
TOTAL	36042·6	18634·7	12731·2	3763·9	47·1	865·7
II. Irrigation and Power—						
Multipurpose Projects	26590·0	26590·0	..	..	..	.
Irrigation Projects	16796·5	..	11234·3	5013·2	366·7	182·3
Power Projects	12754·0	..	9374·7	3135·5	74·9	168·9
TOTAL	56140·5	26590·0	20609·0	8148·7	441·6	351·2
III. Transport and Communications—						
Railways *	25000·0	25000·0	..	..	..	..
Roads	10887·8	3124·0	5059·2	1582·8	494·4	627·4
Road Transport	896·9	..	562·4	96·0	..	238·5
Shipping	1805·8	1805·8	..	..	..	..
Civil Aviation	2287·0	2287·0	..	..	..	..
Ports and Harbours	3308·8	3206·4	26·0	63·0	..	13·4
Inland Water Transport	10·0	10·0	..	..	..	..
Posts and telegraphs	5000·0	5000·0	..	..	..	..
Broadcasting	352·0	352·0	..	..	..	..
Overseas Communications	100·0	100·0	..	..	..	..
Meteorological Department	62·0	62·0	..	..	..	..
TOTAL	49710·3	40947·2	5647·6	1741·8	494·4	879·3

* The outlay of Rs. 250 crores is additional to the estimated expenditure of Rs. 150 crores to cover the current depreciation of assets in the period of the Plan.

Statement I—Development Expenditure Under the Plan; Centre and States—Contd.

(Rs. lakhs)

Head	Total	Central Government	Part 'A' States	Part 'B' States	Jammu and Kashmir	Part 'C' States
1	2	3	4	5	6	7
IV. Industry—						
Large-scale Industries .	14033·2	12604·3*	1025·8	352·5	50·6	..
Cottage and Small-scale Industries.	2704·1	1500·0	764·9	356·9	31·2	51·1
Scientific and Industrial Research	461·0	461·0	..	..	..	..
Mineral Development . .	106·1	106·1	..	..	..	..
TOTAL .	17304·4	14671·4	1790·7	709·4	81·8	51·1
V. Social Services—						
Education	15566·1	3901·6	9881·0	1227·4	46·0	510·1
Health	9954·6	1787·4	6350·3	1238·1	128·2	450·6
Housing	4881·6	3850·0	877·1	87·5	12·0	55·0
Labour and Labour Welfare .	691·7	397·3	273·1	20·3	..	1·0
Amelioration of Backward Classes and Scheduled Castes and Tribes . .	2887·2†	700·0	1848·1	316·6	..	22·5
TOTAL .	33981·2	10636·3	19229·6	2889·9	186·2	1039·2
VI. Rehabilitation . .	8500·0	8500·0	..	..	..	..
VII. Works and buildings	1102·3	1102·3	..	..	..	..
VIII. Finance Ministry schemes	439·6	439·6	..	..	..	..
IX. North-east Frontier agency	300·0	300·0	..	..	..	..
X. Andamans . .	382·8	382·8	..	..	..	..
XI. Loans to Corporations	1200·0	1200·0	..	..	..	..
XII. Miscellaneous . .	1774·4	650·0	1003·5	72·0	48·9	..
GRAND TOTAL .	206878·1	124054·3	61011·6	17325·7	1300·0	3186·5

*Includes lumpsum provision of Rs. 50 crores for basic industries and transport and programme for mineral exports.

†This includes Central grants amounting to Rs. 3 crores; in addition, about Rs. 9 crores are likely to be available by way of grants from the Central Government under Article 275 (1) of the Constitution.

Statement II—Development Expenditure Under the Plan : Part 'A' States

(Rs. lakhs)

Head	Assam	Bihar	Bombay	Madhya Pradesh	Madras
1	2	3	4	5	6
Agriculture	276·1	1284·3	1748·4	1005·5	1593·7
Veterinary and Animal Husbandry	12·5	92·5	166·9	98·8	100 0
Dairying and Milk Supply	..	1·5	602·1	36·9	50·0
Forests	36·3	125·0	83·8	40·8	38·8
Co-operation	29·3	39·0	123·2	28·8	100·0
Fisheries	6·0	10·6	16·0	5·8	100·0
Rural Development	39·3	124·7	131·5	165·9	200·0
I. Agricultural and Rural Development.	399·5	1677·6	2871·9	1382·5	2182·5
Multipurpose Projects.	..	..	..	..	..
Irrigation Projects	200·0	973·3	2269·0	308·0	3408·0
Power Projects	83·0	708·7	1043·0	600·0	5024·0
II. Major Irrigation and Power Projects.	283·0	1682·0	3312·0	908 0	8432·0
Cottage Industries	250·0	59·2	103·1	9·2	116·9
Other Industries	..	60·0	250·6	226·2	85·1
III. Industry	25·0	119·2	353·7	235·4	202·0
Roads	213·0	800·0	1163·6	200·0	500·0
Road Transport	31·9	..	200·0	..	..
Ports and Harbours	..	..	25·0	..	..
IV. Transport	244·9	800·0	1388·6	200·0	500·0
Education	89·9	570·4	4611·1	1079·3	800·0
Medical	173·5	403·9	536·4	267·9	300 0
Public Health	17·8	196·0	1116·7	78·2	900·0
Housing	..	100·0	77·2	20·0	300·0
Labour and Labour Welfare	6·0	20·0	162·3	0·5	..
Amelioration of Backward Classes	509·6	160·0	213·6	136·4	467·6
V. Social Services	796·8	1450·3	6717·3	1582·3	2767·6
VI. Miscellaneous	..	..	..	..	..
GRAND TOTAL	1749·2	5729·1	14643·5	4308·2	14084·1

Statement II—Development Expenditure Under the Plan : Part 'A' States—Contd.

(Rs. lakhs)

Head	Orissa	Punjab	Uttar Pradesh	West Bengal	Total
1	7	8	9	10	11
Agriculture	205·5	210·7	2095·9	688·1	9108·2
Veterinary and Animal Husbandry	52·8	22·0	134·1	74·7	754·3
Dairying and Milk Supply	9·2	..	20·6	50·0	770·3
Forests	13·1	18·0	165·2	78·8	599·8
Co-operation	28·9	11·8	130·7	..	491·7
Fisheries	33·4	..	6·2	154·5	332·5
Rural Development	10·0	..	..	3·0	674·4
I. Agriculture and Rural Development	352·9	262·5	2552·7	1049·1	12731·2
Multipurpose Projects	..	..	..	..	..
Irrigation Projects	300·0	326·2	1912·0	1537·8	11234·3
Power Projects	391·0	38·2	1411·0	75·8	9374·7
II. Major Irrigation and PowerProjects	691·0	364·4	3323·0	1613·6	20609·0
Cottage Industries	27·6	48·1	301·5	74·3	764·9
Other Industries	65·3	15·5	280·7	42·4	1025·8
III. Industry	92·9	63·6	582·2	116·7	1790·7
Roads	200·0	75·1	522·4	1385·1	5059·2
Road Transport	20·0	..	120·0	190·5	562·4
Ports and Harbours	1·0	..	..	..	26·0
IV. Transport	221·0	75·1	642·4	1575·6	5647·6
Education	179·5	118·0	1603·8	808·1	9860·1
Medical	78·7	73·9	349·8	1210·2	3394·3
Public Health	46·4	50·1	246·1	304·7	2956·0
Housing	..	11·3	145·2	223·4	877·1
Labour and Labour Welfare	1·9	1·8	101·5	..	294·1
Amelioration of Backward Classes	116·4	..	236·2	8·3	1848·1
V. Social Services	422·9	255·1	2682·6	2554·7	19229·6
VI. Miscellaneous	3·5	100·0	..	..	1003·5
GRAND TOTAL	1784·2	2020·7	9782·9	6909·7	61011·6

Statement III—Development Expenditure Under the Plan : Part 'B' States and Jammu and Kashmir

(Rs. lakhs)

Head	Hyderabad	Madhya Bharat	Mysore	Pepsu
1	2	3	4	5
Agriculture	346·4	750·0	443·0	364·9
Animal Hubandry	49·6	50·0	53·8	10·0
Dairying and Milk Supply	1·7	..	—	—
Forests	21·4	50·0	8·3	43·6
Co-operation	35·3	25·0	7·1	15·0
Fisheries	8·6	10·0	2·2	2·4
Rural Development	..	60·0	81·1	..
I. *Agriculture and Rural Development*	463·0	945·0	595·5	435·9
Multipurpose Projects	—	..	..	..
Irrigation Projects	2479·0	328·0	716·0	34·0
Power Projects	320·6	228·0	1268·0	30·6
II. *Major Irrigation and Power Projects*	2799·6	556·0	1984·0	64·6
Cottage Industries	25·7	50·0	135·4	4·4
Other Industries	268·7	5·0	34·8	27·3
III. *Industry*	294·4	55·0	170·2	31·7
Roads	128·6	189·0	320·1	95·1
Road Transport	..	..	..	..
Ports and Harbours	..	..	—	..
IV. *Transport*	128·6	189·0	320·1	95·1
Education	263·5	200·0	225·6	89·9
Medical	117·7	77·0	56·5	56·0
Public Health	88·2	121·2	158·3	29·0
Housing	..	14·4	50·0	2·0
Labour and Labour Welfare	..	4·4	..	..
Amelioration of Backward Classes	—	80·0	100·0	10·0
V. *Social Services*	469·4	497·0	590·4	186·9
VI. *Miscellaneous*	—	—	..	—
GRAND TOTAL	4155·0	2242·0	3660·2	814·2

Statement III—Development Expenditure Under the Plan: Part 'B' States and Jammu and Kashmir—Contd.

(Rs. lakhs)

Head	Rajasthan	Saurashtra	Travancore-Cochin	Jammu and Kashmir	Total
	6	7	8	9	10
Agriculture	109·2	212·4	545·1	22·1	2771·0
Veterinary and Animal Husbandry	18·3	10·4	2·5	15·0	194·6
Dairying and Milk Supply	..	1·6	..	..	3·3
Forests	21·8	19·6	60·0	10·0	224·7
Co-operation	3·0	31·8	8·0	..	125·2
Fisheries	..	34·7	15·0	..	72·9
Rural Development	15·0	216·1	..	..	372·2
I. Agriculture amd Rural Development	167·3	526·6	630·6	47·1	3763·9
Multipurpose Projects	..	..	..	..	..
Irrigation Projects	503·6	474·6	478·0	366·7	5013·2
Power Projects	40·8	212·5	1035·0	74·9	3135·5
II. Major Irrigation and Power Projects	544·4	687·1	1513·0	441·6	8148·7
Cottage Industries	38·5	13·9	89·0	31·2	356·9
Other Industries	..	0·9	15·8	50·6	352·5
III. Industry	38·5	14·8	104·8	81·8	709·4
Roads	400·0	300·0	150·0	494·4	1582·8
Road Transport	1·0	53·0	42·0	..	96·0
Ports and Harbours	..	33·0	30·0	..	63·0
IV. Transport	401·0	386·0	222·0	494·4	1741·8
Education	263·5	164·9	20·0	46·0	1227·4
Medical	82·0	71·5	120·0	46·0	580·7
Public Health	135·5	73·7	51·5	82·2	657·4
Housing	2·0	9·1	10·0	12·0	87·5
Labour and Labour Welfare	5·0	10·9	..	..	20·3
Amelioration of Backward Classes	42·2	24·4	60·0	..	316·6
V. Social Services	530·2	354·5	261·5	186·2	2889·9
VI. Miscellaneous	..	72·0	..	48·9	72·0
GRAND TOTAL	1681·4	2041·0	2731·9	1300·0	17325·7

Statement IV—Development Expenditure Under the Plan : Part 'C' States

(Rs. lakhs)

Head	Ajmer	Bhopal	Bilaspur	Coorg	Delhi	Himachal Pradesh
1	2	3	4	5	6	7
Agriculture	48·4	173·0	7·0	..	63·6	28·0
Veterinary and Animal Husbandry	9·6	7·0	1·1	..	9·4	22·4
Dairying and Milk Supply	..	..	..	1·0	4·9	..
Forests	10·6	20·0	5·0	..	2·2	59·0
Co-operation	8·4	5·0	..	2·0	6·3	15·0
Fisheries	..	2·0	..	..	2·6	1·0
Rural Development	..	..	0·5	..	..	..
I. Agricultural and Rural Development	77·0	207·0	13·6	3·0	89·0	125·4
Irrigation Projects	11·3	..	..	..	..	80·0
Power Projects	..	27·9	..	35·0	..	13·5
II. Major Irrigation and Power Projects	11·3	27·9	..	35·0	..	93·5
Cottage Industries	..	5·0	0·5	..	7·3	23·0
Other Industries	..	..	..	..	..	..
III. Industry	..	5·0	0·5	..	7·3	23·0
Roads	15·9	40·0	23·0	20·0	25·0	110·0
Road Transport	..	..	2·0	..	216·0	10·0
Ports and Harbours	..	..	..	..	..	..
IV. Transport	15·9	40·0	25·0	20·0	241·0	120·0
Education	15·0	30·0	10·0	10·0	259·8	36·8
Medical	31·9	25·0	4·0	5·0	58·9	18·1
Public Health	6·1	50·0	4·0	..	36·0	37·9
Housing	..	..	..	..	55·0	..
Labour and Labour Welfare	..	..	..	..	1·0	..
Amelioration of Backward Classes	..	5·0	..	..	..	..
V. Social Services	53·0	110·0	18·0	15·0	410·7	92·8
GRAND TOTAL	157·2	389·9	57·1	73·0	748·0	454·7

Statement IV—Development Expenditure Under the Plan : Part 'C' States—Contd.

(Rs. lakhs)

Head	Kutch	Manipur	Tripura	Vindhya Pradesh	Total
	8	9	10	11	12
Agriculture . . .	60·6	0·8	12·6	204·7	598·7
Animal Husbandry . .	3·9	2·5	2·8	12·9	71·6
Dairying and Milk Supply .	..	..	..	1·5	7·4
Forests . . .	1·4	3·0	11·3	22·5	135·0
Co-operation . . .	3·5	..	1·1	3·0	44·3
Fisheries . . .	1·4	..	..	1·2	8·2
Rural Development . .	..	..	..	..	0·5
I. Agriculture and Rural Development . .	70·8	6·3	27·8	245·8	865·7
Irrigation Projects . .	91·0	..	..	..	182·3
Power Projects . .	23·0	12·0	7·0	50·5	168·9
II. Major Irrigation and Power Projects . .	114·0	12·0	7·0	50·5	351·2
Cottage Industries . .	3·5	..	5·8	6·0	51·1
Other Industries . .	..	..	..	..	—
III. Industry . .	3·5	..	5·8	6·0	51·1
Roads . . .	58·3	81·3	128·0	125·9	627·4
Road Transport . .	..	10·5	..	..	238·5
Ports and Harbours . .	13·4	..	..	..	13·4
IV. Transport . .	71·7	91·8	128·0	125 9	879·3
Education . . .	6·8	17·7	24·0	100·0	510·1
Medical	26 0	6·0	11·7	36·0	222·6
Public Health . . .	10·0	21·0	3·0	60·0	228·0
Housing . . .	..	..	..	..	55·0
Labour and Labour Welfare	..	..	..	..	1·0
Amelioraton of Backward Classes . .	2·5	..	..	15·0	22·5
V. Social Services .	45·3	44·7	38·7	211·0	1039·2
GRAND TOTAL .	305·3	154·8	207·3	639·2	3186·5

Statement V—Progress of Development Expenditure : Central Government

(Rs. lakhs)

Head	Expenditure in 1950-51	Progress of expenditure		Five Years' Total (Plan) 1951-56
		1951-52 Revised	1952-53 Budget	
1	2	3	4	5
I. Agriculture and Community Development :				
Agriculture	244·3	256·2	303·2	5922·2*
Animal Husbandry including Dairying.	..	..	30·3	412·0
Forests.	..	..	..	200·0
Cooperation	..	..	..	50·0
Fisheries.	..	..	..	50·5
Community Projects . .	..	..	†	9000·0
Local Works	..	..	..	1500·0
Programmes for scarcity-affected areas	..	..	..	1500·0
TOTAL	244·3	256·2	333·5	18634·7
II. Major Irrigation and Power Projects	2210·0	3666·0	4033·0	26590·0‡
III. Industry :				
Large-scale industries . .	635·3	991·9	1272·9	12604·3§
Small-scale and Cottage industries	14·5	17·0	20·0	1500·0
Scientific and Industrial Research	96·0	75·2	107·5	461·0
Mineral Development . .	..	4·2	18·8	106·1
TOTAL	745·8	1088·3	1419·2	14671·4

*Includes additional provision for the period 1953-56 for minor irrigation—Rs. 30 crores; medium and long term loans to agriculturists—Rs. 10 crores; national extension organization—Rs. 3 crores; forests and soil conservation—Rs. 2 crores; Resettlement of landless agricultural workers—Rs. 2 crores.

†Details of expenditure incurred are not available.

‡Includes Rs. 40 crores for new irrigation and power projects for the period 1953-56.

§Includes lump-sum provision of Rs. 50 crores for basic industries and transport for the period 1953-56.

Statement V—Progress of Development Expenditure : Central Government—Contd.

(Rs. lakhs)

Head	Expenditure in 1950-51	Progress of expenditure		Five Years' Total (Plan) 1951-56
		1951-52 Revised	1952-53 Budget	
1	2	3	4	5
IV. Transport :				
Roads	296·1	365·0	600·0	3124·0
Inland Water Transport .	..	2·0	2·0	10·0
Ports and Harbours . .	78·8	85·7	240·0	3206·4
Shipping	155·1	158·7	418·6	1805·8
Railways	3331·0	4689·0	4910·0	25000·0
Civil Aviation . . .	178·2	185·0	217·0	2287·0
Posts and Telegraphs . .	753·9	487·0	579·0	5000·0
Overseas Communications .	8·0	20·0	20·0	100·0
Meteorological Department .	..	15·0	15·0	62·0
Broadcasting . . .	16·4	35·0	43·3	352·0
TOTAL	4817·5	6042·4	7044·9	40947·2
V. Social Services :				
Education	124·6	149·4	423·0	3901·6*
Health	7·5	10·3	45·5	1787·4
Housing	100·0	168·0	900·0	3850·0
Labour and Labour Welfare.	55·9	48·5	55·3	397·3
Amelioration of Backward Classes, Scheduled Castes and Tribes . . .	..	174·7	180·0	700·0†
TOTAL	288·0	550·9	1603·8	10636·3
VI. Rehabilitation . . .	2032·7	2854·4	2657·5	8500·0
VII. Works and Buildings. .	23·4	57·4	207·8	1102·3
VIII. Finance Ministry Schemes	92·0	100·5	108·9	439·6
IX. North East Frontier Agency	10·6	30·0	20·9	300·0
X. Andamans . . .	..	..	..	382·8
XI. Loans to Corporations .	..	..	..	1200·0
XII. Miscellaneou[illegible] .	..	..	..	650·0
GRAND TOTAL	10464·3	14646·1	17429·5	124054·3

*Includes Rs. 4 crores for voluntary welfare organisations for the period 1953-56.

†In addition, about Rs. 9 crores are likely to be available by way of Central grants under Article 275 (1) of the Constitution.

Statement VI—Progress of Development Expenditure in States by Heads of Development

(Rs. lakhs)

Head	Development Expenditure in 1950-51	Progress of expenditure		Five Years' Total (Plan) 1951-56
		1951-52 (Revised)	1952-53 (Budget)	
1	2	3	4	5
Agriculture	2709·2	2274·6	2525·8	12500·0
Veterinary and Animal Husbandry	96·9	123·9	174·8	1035·5
Dairying and Milk Supply	122·7	138·9	95·7	781·0
Forests	75·1	87·0	166·7	969·5
Co-operation	82·6	99·9	116·7	661·2
Fisheries	53·3	57·1	65·8	413·6
Rural Development	85·2	136·8	195·2	1047·1
TOTAL	3225·0	2918·2	3240·7	17407·9
Irrigation Projects	2035·5	2894·6	3506·2	16796·5
Power Projects	1777·3	2224·3	2844·1	12754·0
TOTAL	3812·8	5118·9	6350·3	29550·5
Cottage Industries	102·3	126·2	185·9	1204·1
Other Industries	445·5	344·3	460·6	1428·9
TOTAL	547·8	470·5	646·5	2633·0
Roads	954·5	1226·3	1795·6	7763·8
Road Transport	144·4	137·0	200·4	896·9
Ports and Harbours	0·1	7·0	12·8	102·4
TOTAL	1099·0	1370·3	2008·8	8763·1
Education	1833·3	2005·6	2253·6	11664·5
Medical	552·6	763·0	873·1	4243·6
Public Health	366·0	516·5	611·5	3923·6
Housing	142·5	215·8	299·7	1031·6
Labour and Labour Welfare	32·3	32·8	38·8	294·4
Amelioration of Backward Classes	259·6	338·6	409·7	2187·2
TOTAL	3186·3	3872·3	4486·4	23344·9
Miscellaneous	72·6	108·9	303·4	1124·4
GRAND TOTAL	11943·5	13859·1	17136·1	82823·8

Statement VII—Progress of Development Expenditure by States

(Rs. lakhs)

States	Expenditure in 1950-51	Progress of expenditure		Five Years' Total (Plan) 1951-56
		1951-52 (Revised)	1952-53 (Budget)	
1	2	3	4	5
Assam	103·0	141·8	247·7	1749·2
Bihar	793·9	1348·6	1531·8	5729·1
Bombay	2011·0	2312·2	2922·7	14643·5
Madhya Pradesh	797·5	782·4	954·3	4308·2
Madras	3064·2	2770·5	3008·2	14084·1
Orissa	320·3	278·9	366·6	1784·2
Punjab	281·2	377·3	591·0	2020·7
Uttar Pradesh	1378·3	1722·6	2294·1	9782·9
West Bengal	1012·2	1308·1	1376·1	6909·7
TOTAL 'A' STATES	9761·6	11042·4	13292·5	61011·6
Hyderabad	602·9	714·8	792·6	4155·0
Madhya Bharat	213·1	251·0	438·8	2242·0
Mysore	524·3	542·8	627·9	3660·2
PEPSU	47·5	52·5	119·2	814·2
Rajasthan	189·8	217·7	216·1	1681·4
Saurashtra	158·0	212·8	357·6	2041·0
Travancore-Cochin	270·5	504·4	598·1	2731·9
TOTAL 'B' STATES	2006·1	2496·0	3150·3	17325·7
Jammu and Kashmir	27·3	134·1	136·9	1300·0
Ajmer	12·6	14·5	20·3	157·2
Bhopal	41·2	40·5	83·4	389·9
Bilaspur	1·3	3·0	11·4	57·1
Coorg	2·4	6·4	7·5	73·0
Delhi	51·4	59·5	120·6	748·0
Himachal Pradesh	6·4	17·7	94·7	454·7
Kutch	4·1	18·2	74·7	305·3
Manipur	0·4	..	21·5	154·8
Tripura	2·3	4·8	25·9	207·3
Vindhya Pradesh	26·4	22·0	96·4	639·2
TOTAL 'C' STATES	148·5	186·6	556·4	3186·5
GRAND TOTAL	11943·5	13859·1	17136·1	82823·8

APPENDIX TO PART I

NATIONAL BUDGETING AND THE PLAN

National budgeting is a technique of economic planning which has been used in recent years in countries like the United Kingdom, Netherlands, Norway and Sweden to ensure a certain balance between the demand for resources and the supply of resources from year to year. A national budget is different from other familiar forms of budgets (as those of governments and local authorities) in that it attempts to cover the economy as a whole and not just a part of the transactions within it. It takes into account not only the fiscal budget but also aggregate consumer income and expenditure, accounts of corporate and unincorporated enterprises, budgets of local authorities, etc. For ensuring a balance between the demand for particular goods and services and their supply (in addition to a balance between aggregate demand and aggregate supply), investment budgets as well as commodity, foreign exchange and manpower budgets are also constructed for the purpose of national budgeting.

2. The usefulness of an approach which encompasses the whole system and, in consequence, helps to formulate economic policies based on an analysis of their likely repercussions on all important aspects of its operation and growth cannot be over-estimated. It might be even regarded as a pre-requisite of systematic planning. There are, however, several difficulties in practice. The most striking of these is often the dearth of statistical material in the required detail. Before a national budget can be constructed there should be, at the very minimum, a set of national accounts for a series of years which could be used as the basis of forecasting. Though progress in regard to national income statistics has been considerable in the last decade, the lacunae from the point of view of national budgeting are still many. Data in regard to savings are very imperfect in most countries, since they are often derived as a residual and are not always directly computed. Even where a fairly reliable series of data exist, savings cannot always be related to the forms in which they are held or the financial intermediaries through which they flow, so that it is not possible to infer from them the asset-preferences of the community. On the side of investment, information on changes in the holdings of stocks is in almost all cases of a scattered nature and includes the effects of price changes. The relationships between these magnitudes are vital factors in economic forecasting, particularly when there is a large sector in the economy which is only partially planned and controlled.

3. Apart from the statistical limitations, there are the usual problems involved in forecasting when a number of variables are involved and when the precise nature of the relationships between them is not clear. These relationships are often complicated by behaviouristic, institutional and technical factors like changes in tastes, shifts in the distribution-pattern of incomes, possibilities of substitution between one factor and another, innovations, rate of growth of education and technical skills, etc. In a growing, dynamic system these factors could make a considerable difference to the demand and supply of resources even in the short period.

4. The above considerations apply with special force at the present time in India. National income statistics are still in their infancy. There are large gaps in the information available about certain sectors of the economy, which probably introduce a high margin of error even into the estimates of aggregate national income. No estimates of aggregate consumption expenditure have been made on a basis comparable to the estimates of aggregate national income. Little is known of the processes of capital formation in the rural sector or of its magnitude. Estimates of the contribution of services (including trade) to the national product are by and large notional. At the same time there are evidently significant changes taking place in the distribution of incomes, not only as between the urban and rural sectors but as between various classes within these sectors. These are proceeding side by side with changes in the community's pattern of consumption and they have the effect, to some extent, of diversifying employment opportunities and absorbing part of the unutilised and under-utilised resources. The rapid and growing rate of migration from rural to urban areas is another factor which affects consumption and employment patterns. Of all these only the barest details are known, insufficient even to reconstruct a picture of what precisely have been their effects on the demand and supply of resources in the last few years, not to mention their complete inadequacy for purposes of forecasting future trends.

5. Any attempt to bring out statistically the implications of planning in India in terms of concepts and relationships used in national budgeting elsewhere can, at this stage, serve only an illustrative purpose. The statistical basis of the estimates would be admittedly weak. In a country in which additions to investment are likely to take place to a great extent through the direct application of hitherto unutilised manpower, leading in turn in a variety of ways to improvements in income and consumption standards, the estimates may not even adequately reflect the nature of the changes that will come about as a result of development. They could, however, serve one purpose. Provided it is understood that the estimates represent only certain notional magnitudes, which have to be tested as more reliable statistics become available, they could provide a basis for making a provisional appraisal of the Plan and for checking in a general way its internal consistency.

Estimates of net Output by Industrial Origin

6. An estimate of national income by industrial origin is available for 1948-49 in the First Report of the National Income Committee. In the Five Year Plan there are targets of production for the more important industries and commodity groups. On the basis of these two sets of data an attempt can be made to estimate the likely dimensions of the national income by the end of the plan period. It is inevitable that the forecasts would be firmer for some sectors than for others. In agriculture, for instance, the commodities for which there are specific targets in the Plan cover about 60 per cent of the total output. The coverage of the Plan in respect of industries organized on a factory basis is also fairly large. But in other spheres, particularly in regard to small enterprises in industry and trade and the tertiary sector in general, the basis for forecasting is less firm.

7. The estimates of net output in 1955-56, prepared on the basis indicated above, are shown in the following table according to industrial origin and in a form comparable to those published for 1948-49 by the National Income Committee :

	(Value expressed at 1948-49 prices in Rs. hundred crores)	
	1948-49*	1955-56
Agriculture—		
1. Agriculture, animal husbandry and ancillary activities	40.7	47.9
2. Forestry	0.6	0.6
3. Fishery	0.2	0.3
	41.5	48.8
Mining, Manufacturing and Hand-trades—		
4. Mining	0.6	0.8
5. Factory establishments	5.0	6.8
6. Small enterprises	9.4	10.6
	15.0	18.2
Commerce, Transport and Communications—		
7. Communications (posts, telegraph and telephone)	0.3	0.4
8. Railways	1.8	2.3
9. Organised banking and insurance	0.5	0.6
10. Other commerce and transport	14.4	15.4
	17.0	18.7
Other Services—		
11. Professions and liberal arts	3.2	3.4
12. Government services (administration)	4.6	5.1
13. Domestic service	1.5	1.5
14. House property	4.5	4.8
	13.8	14.7
NET DOMESTIC PRODUCT AT FACTOR COST	87.3	100.4
Net earned income from abroad	—0.2	—0.4
NATIONAL INCOME	87.1	100.0

* The estimates for 1948-49 are from the First Report of the National Income Committee. An amount of Rs. 0·8 hundred crores has however been transferred from 'Factory Establishments' to 'Small Enterprises', and Rs. 0·2 hundred crores from 'Railways' to 'Other Commerce and Transport'.

8. It will be seen that the largest addition to national output is expected to come from the agricultural sector though, in terms of percentage increases, the greatest improvement is likely to be shown in industries organised on a factory basis. A more detailed breakdown of the estimates in respect of agriculture (excluding forestry and fishery) is given below:—

	(Value expressed at 1948-49 prices in Rs. hundred crores)	
	1948-49	1955-56
Foodgrains (including pulses and gram but excl. fodder crops)	23.4	27.4
Commercial crops	7.7	11.0
Vegetables, fruits, condiments and spices	5.8	6.3
Miscellaneous crops and livestock	12.0	12.8
Adjustments required in respect of above items	—8.2	—9.6
	40.7	47.9

As for factory establishments, the estimates are based mainly on net values added by manufacture in 1949 (for which data are available from the Census of Manufactures) and on the production targets for 1955-56 in the working plans for industries prepared by the Commission. In the case of a few industries not covered by the Census of Manufactures, rough estimates have been attempted on the basis of available data on the gross value of output and the raw materials consumed. The industries which are covered individually in these ways account for about 2/3 of the net value added by factory establishments in 1948-49; in respect of these industries it is estimated that there would be an increase in net output of the order of 40 per cent by 1955-56. In the remaining industries (*i.e.*, those accounting for 1/3 of the net value added by factory establishments in 1948-49) it is assumed that there would be an improvement of about 25 per cent in the same period.

9. The industries for which individual estimates have been attempted could be broadly divided into consumer goods and producer goods industries. The net output of the former, which covers industries like cotton and woollen textiles, sugar, soap, paper, electric fans, vegetable oils etc., is expected to go up by about 24 per cent as compared to 1948-49. The increases are likely to be more striking in producer goods industries where the improvement is expected to be of the order of 70 per cent. A breakdown of the estimates of the net output of factory establishments, reclassified roughly according to the nature of the product, is given below :

	(Rs. crores)	
	1948-49	1955-56
I. Industries covered individually in the estimates :		
Consumer goods industries :		
(*i*) Primary essentials (including cotton and woollen textiles, vegetable oils, soap, paper, glass and glassware, etc.)	202	241
(*ii*) Secondary essentials (including bicycles, sewing machines, electric lamps and fans, silk and artificial silk, etc.)	4	12

	(Rs. crores) 1948-49	1955-56
Producer goods industries :		
(*i*) Chemicals and metals	32	57
(*ii*) Fuel oil and power (i.e., petroleum and electricity)	17	38
(*ii*) Engineering (including machine tools, diesel engines, batteries and dry cells, electric motors, power transformers, locomotives and wagons , textile machinery, etc.)	31	64
(*iv*) Other intermediate products (including jute textiles, cement, paints and varnishes, etc.)	47	56
II. Other industries not covered by individual estimates	167	209
	500	677

10. Small enterprises cover village industries and crafts as well as urban industries not covered by the Indian Factories Act. The inadequacy of data in regard to these and the tentative nature of the estimate for even 1948-49 (the base year used in our calculations) has been emphasized in the First Report of the National Income Committee. The Five Year Plan sets down certain targets for village industries like handloom, oil ghanis, khadi, gur and *khandsari*, leather etc.; the net value added by these industries, after allowing for subsidies that might be required by way of cesses on the factory industries, is likely to be about Rs. 40 to 50 crores higher by the end of the Plan than in 1948-49. For the rest, an increase in output of 1 per cent per annum over the period covered has been assumed.

11. The net value added by railways covers mainly the gross earnings adjusted for cost of raw materials; since the wages and salaries paid out in the capital expenditure of the railways do not come into the estimates elsewhere, some allowance has also to be made for these. The estimates for 1955-56 are based on an assumed increase of 15 per cent in the volume of passenger traffic and of 40 per cent in the volume of goods traffic as compared to 1948-49; about 50 per cent of the expenditure on the capital programme in 1955-56 is also assumed to be on wages and salaries and is taken credit for.

12. The estimate in regard to 'Other commerce and transport' assumes that the contribution of these to the national product will go up by roughly 10 per cent of the increase in commodity production which is taken roughly as the output under agriculture, mining, manufacturing and hand-trades. The estimates for 'Other Services' are notional.

13. The use of 1948-49 as the base year in the above calculations prevents a direct estimate being derived of the increase in national income in the period of the Plan. It may, however, be safe to assume that the level of per capita income was perhaps only maintained constant between 1948-49 and 1950-51. If this assumption is made, the national income in 1950-51 (at 1948-49 prices) would work out to about Rs. 8900-9000 crores, and the increase in the

national income by the end of the Plan at 11 to 12 per cent of the 1950-51 level. It must be emphasized however that this estimate of the increase in national income in the Plan period does not take fully into account the possible increases in income from some of the schemes like the community development programme which figure in the Plan. Direct application of unutilised resources and concentrated efforts for increasing productivity may in specific areas raise incomes by 25 per cent or more, but in what manner this will come about or how widespread such increases will be cannot be precisely foreseen at this stage.

Saving and Investment in the Economy

14. The information available on saving and investment in the economy is naturally even more fragmentary than the data for estimating national income. We should therefore stress once again that the estimates presented here are only intended to be illustrative and to serve as a basis for fixing certain magnitudes which, however notional, are useful for planning.

15. On the side of investment, the most reliable estimate that can be made is for investment in the public sector. An analysis of government expenditures shows that the net investment on public account in 1950-51 was of the order of Rs. 185 crores.*

This was roughly distributed as follows :—

	(Rs. crores)
Irrigation, navigation, drainage, etc. (including multi-purpose river valley schemes)	47
Agriculture	7
Electricity	23
Industries	12
Railways and communications	38
Roads and buildings	42
Other miscellaneous heads (including expenditure not fully covered by above)	16
	185

In regard to investment in the private sector the data available are more suggestive than conclusive. For instance, in 1950-51, imports of 'Machinery and Mill Work' amounted to about Rs. 80 crores; together with 'Instruments, Apparatus and Appliances' and 'Vehicles' (excluding motor cars and cycles but including locomotives, wagons and spare parts), the total imports of capital goods in this year amounted to about Rs. 121 crores. Approximately Rs. 40 crores of the imports were probably for investment in the public sector, and another Rs. 10 crores or so were likely to have been in the nature of durable goods used directly by consumers.

*In conformity with the definition of net investment used here, which relates mainly to investment in fixed capital (*i.e.* machinery and capital equipment, tools and implements, communications, buildings, etc.) net of depreciation, an amount of about Rs. 47 crores has been deducted from 'development expenditure in the public sector' to allow for recurring expenditures in the development programme.

The remaining Rs. 70 crores could be considered as having been imported for private investment in industry and transport. For a more accurate measure of the net investment in the private sector on capital equipment, it would appear that the following adjustments would also have to be made :

(*i*) addition of 25 per cent of imported value of equipment to cover customs duty, distribution charges and installation costs;

(*ii*) addition of about Rs. 60 crores for the output of equipment by the domestic engineering industry organised on a factory basis; and

(*iii*) a deduction of about Rs. 30 crores to allow for equipment required to meet depreciation.

Thus we arrive at a figure of about Rs. 105-110 crores as the likely order of net investment in capital equipment in industries and transport, large as well as small-scale, in 1950-51. There is apt to be some double-counting here since imported material may to some extent be figuring also in the output of the domestic engineering industry. But, on the other hand, this estimate does not cover the output of durable capital goods by small enterprises in the country (e.g. bullock carts and hackney carriages, tools and implements, iron castings, etc.).

16. The other important item of capital formation on private account is construction of buildings. In regard to this again, the information available is inconclusive. The allocations for construction of buildings of certain materials like cement and steel provide the only basis on which estimates can be attempted at this stage. The available data on these allocations, applied to certain rough estimates as to the cost of building covered by materials like cement and steel, suggest that net private investment in constructions using these materials was probably of the order of Rs. 100 crores in 1950-51. The differences in construction materials used in different areas and in different types of buildings are however so great that this estimate can be regarded as only a first approximation. It will be noticed also that it does not cover constructions which do not use cement and steel (mainly in the rural areas).

17. The gap in our information is greatest in respect of investment in agriculture, small-scale and cottage industries and residential construction in rural areas. Such investment draws mainly upon local materials and direct contributions of labour. Transfers of savings for the purpose are probably small relative to the magnitude of investment, and they are in any case difficult to trace. We might surmise that the greater part of the direct investment in rural areas is for covering depreciation of existing capital stock, but it cannot be assumed that the volume of net investment is insignificant. It is also important to bear in mind that, in a programme of development, the largest potentialities lie in the direct application of manpower and local materials to investment.

18. On the side of savings, the savings of the public sector corresponding to the definition of net investment used here can be computed roughly from the accounts of the Central and State Governments. Income tax statistics show the incomes of corporate enterprises (exclusive of depreciation provisions) as well as taxes and dividends paid by them, from which a

rough estimate can be made of corporate savings. As for personal savings and savings of unincorporated enterprises, they are of two kinds: (*a*) those directly invested in agriculture, small scale and cottage industries, and residential housing; and (*b*) those invested in financial assets and which, therefore, lead to corresponding increase in financial liabilities in the system. Any estimate of savings directly invested in agriculture, small scale and cottage industries, and residential housing would naturally have to correspond to the estimate of such investment; as already mentioned, there is little information available on these, and so the margins of error are likely to be substantial. As for savings invested in financial assets, which find their way into real investment through the government and other institutional agencies, fairly reliable data are available on some of the assets into which private savings flow. But there is again some chance of double-counting here, and moreover, with the available information the net cannot be cast wide enough to cover the entire range of private savings invested in financial assets.

19. Subject to all the limitations and deficiencies detailed above, an attempt can be made to construct an illustrative model of the pattern of saving and investment in the economy. The following statement shows rough estimates for the major categories of saving and investment in 1950-51:

		(Rs. crores)
INVESTMENT*		
Domestic investment on public account		185
Domestic investment on private account—		
(*i*) Large and small scale industries		80
(*ii*) Transport other than railways		25
(*iii*) Construction of buildings (including residential housing and business construction)		100
(*iv*) Agriculture, and cottage and small scale industries in rural areas		20
Investment abroad (net)†		60
		470
SAVING		
Savings of the public sector (including railways)		98‡
Savings of the private sector—		
(*a*) corporate enterprises		40
(*b*) unincorporated enterprises and personal savings (residual)		332
of which		
Private savings as reflected in—		
(*i*) Insurance policies	40§	..
(*ii*) Co-operative banks (deposits and share capital)	25§	..

*Excludes investment in inventories.

†Represents the increase in net external assets on account of the surplus in balance of payments in this year.

‡Since about Rs. 47 crores have been deducted from the development programme in the 'public sector' to allow for recurring expenditures not coming within the definition of 'net investment' used here, a similar amount is deducted from 'public savings' as shown in Chapter III of this Report.

§Estimates are based on data for 1949-50.

(*iii*) Small savings	30*	...
(*iv*) Provident funds	15	...
(*v*) Currency and scheduled bank deposits	100†	...
Private savings directly invested in agriculture, cottage and small-scale industries, transport and construction of buildings.	150	...
Net adjustment for omissions and double-counting in above	12	...
	372	470

The estimate of Rs. 470 crores for net investment excludes changes in inventories; there is evidence that the stocks of raw materials held by manufacturers went down substantially in 1950-51, but it is probable that this was more than counterbalanced by increased stocks held by traders and primary producers on account of the prevailing inflationary conditions. Allowing, however, for the fact that the above estimates are in terms of 1950-51 prices and the estimates of national income for 1950-51 estimated earlier is expressed at 1948-49 prices, the proportion of savings may be placed roughly at 5 per cent of the national income.

20. The assumption in the Plan is that, through appropriate measures, domestic savings will be raised to about 150 per cent of the level in 1950-51; that is, if savings in 1950-51 are estimated at about Rs. 450 crores in terms of 1948-49 prices, they will go up to about Rs. 675 crores by 1955-56. The sectors in which the additional saving will be done and the manner in which they will be channelled into investment cannot be forecast in precise terms, but the broad features of the process can be foreseen. Savings in the public sector are likely to be larger, and so also, with higher production, will be the undistributed profits of corporate and unincorporated enterprises. Agricultural extension services, together with other schemes in the Plan for mobilising under-utilised local resources, will also in effect raise the level of savings in the community. The unsatisfied and growing demand for cement, steel and other materials for residential constructions also indicates that when the supplies of these are increased the resources necessary for undertaking such investment will be forthcoming.

21. If domestic savings go up as assumed, gradually in the first two years and more rapidly in the later years, the resources available internally for investment over the fiveyear period would probably amount to about Rs. 2700-2800 crores. These are expected to be supplemented by (*a*) withdrawal from sterling balances, and (*b*) other external resources; the two together are estimated at about Rs. 800 crores. Internal and external resources would thus make possible an aggregate investment programme in the public and private sectors of the order of Rs. 3500-3600 crores.

Manpower, Commodity and Foreign Exchange Budgets

22. Within the framework of an economy in which there are vast resources of manpower, and in which the problem is one of under-employment and low productivities, manpower budgets of the kind drawn up in advanced industrial systems can have but little significance.

*The net change in the holdings of government securities has not been listed here, as it is difficult to estimate the net change in the holdings of the public excluding those of official and banking institutions here and abroad; part of the investment in government securities would also be covered by premia paid to insurance companies.

†Represents largely money savings as a result of rise in prices in this year.

In the latter, forecasts of manpower movements follow from the investment budgets whose shape and pattern are themselves determined mainly with reference to factors other than manpower. This way of planning manpower movements so as to follow and support investment programmes is appropriate in countries in which the problem is shortage of manpower. But the approach will have to be different in a country which has large surpluses of manpower and where the limiting factor is the capital necessary to employ them*. The surpluses themselves cannot be determined statistically except in a general way with reference to techniques of production and movements in productivity. Given these, the investment programme will have to be so framed as to (*a*) make the maximum utilisation of underemployed manpower, and (*b*) improve techniques of production and thus raise productivity per head. As explained in the earlier chapters of the Report, the importance attached to each of these will have to depend on a variety of considerations. Measures to utilise underemployed manpower should not, except in special cases and in the transitional stage, be such as to reduce productivity in any line. On the other hand, the techniques of production envisaged should not, except in the case of basic industries and services necessary for the rapid expansion of the whole economy, be such as would absorb large amounts of capital leaving little for the employment of surplus manpower.

23. With the data available at the present time on production and disposal of manpower in different lines of activity, only broad judgments can be made on these aspects of the problem, and the investment programme cannot be related in precise statistical terms to productivity in each line and to "surpluses" of manpower calculated on the basis of the changes planned in techniques of production. Broadly we might say that the number dependent on agriculture and ancillary activities will be about 5 per cent higher in 1955-56 than in 1950-51 and, since meanwhile agricultural output is estimated to increase by over 15 per cent, productivity in agriculture is likely to go up by about 10 per cent in this period. In industries organised on a factory basis, production is expected to go up by 40 per cent; probably as much as two-thirds of this increase will come about through higher productivity and the rest from higher employment. In small-scale enterprises no increase in productivity has been assumed, but the information available on output and manpower employed in the different industries in this sector is so meagre that any generalisation is apt to be misleading. In the government sector, the National Income Committee has estimated wages and salaries paid in the capital programme in 1948-49 at about roughly 60 per cent of the expenditure. Since the development outlay on public account is to be more than doubled by 1955-56, a corresponding increase in payments of wages and salaries and in employment may be assumed.

24. With the available information on the pattern of income and consumption in the country, estimates of demand for the purpose of constructing commodity budgets can also be only in the nature of very broad approximations. In the case of the basic commodities of consumption like foodgrains and cloth, supplies are the limiting factor today and one might

*The special problem arising on account of shortages of technical and administrative personnel is dealt with elsewhere in the Report.

assume that if prices are maintained at a fairly stable level increased output will be readily absorbed by domestic demand. In regard to the less essential commodities, the level of prices will be a more important determining factor, and demand may not increase unless the general level of incomes in the community rises or the prices of the commodities concerned are lowered ; lack of effective demand would in turn affect production unless the cost structure of the industries is sufficiently elastic to enable them to lower prices. All these depend on a variety of elasticities concerning consumption and production. Even in countries with more advanced statistical information, estimates in regard to demand and supply are therefore difficult to make. In India the problem of estimation is still more complex. In the various chapters of this Report estimates have been put forward regarding the likely production and consumption levels of specific commodities by the end of the Plan. These, it must be emphasised, are based on a variety of assumptions. Estimates of export and import volumes are also based on such rough assessments of factors affecting demand and supply. These estimates are shown in Chapters III and XXX of the Report. The commodity budgets which figure in this Report must therefore be regarded as operational balance sheets rather han as forecasts.

PART TWO

ADMINISTRATION AND PUBLIC CO-OPERATION

CHAPTER V

INTRODUCTION

The goals of social and economic policy are prescribed in the Directive Principles of the Constitution. The Five Year Plan represents the first attempt on the part of the Central Government and all the States to translate those principles into a national programme based upon the assessment of needs and resources. It is now the task of public administration to carry out this programme in cooperation with the people.

2. In some fields of development, the existing agencies will need to be supplemented and strengthened ; in others, new agencies will be required to carry through the Plan. In all directions, the pace of development will depend largely upon the quality of public administration, the efficiency with which it works, and the co-operation which it evokes. The tasks facing the administration are larger in magnitude and more complex, but also richer in meaning than in earlier days. From the maintenance of law and order and the collection of revenue, the major emphasis now shifts to the development of human and material resources and the elimination of poverty and want. The coming years must be a period of intensive endeavour if the goal of the Welfare State is to be realised. The patterns of organisation and the claims upon both government and administration will now be determined by the needs of development and the effort entailed by the process of development which has been described in the first part of this report. Democratic institutions are in their nature difficult to work, for, they call for a consciousness of social purpose, courage to stand by principles, and restraint in the exercise of authority. In addition to these, leadership is needed in every field of activity if rapid economic development, which must involve effort, privation and social adjustment, is also to be secured through democratic means

Political Executive and Public Services

3. The objectives of development are to be fulfilled through national planning within a democratic framework which encompasses the Central Government and the States as well as, in increasing degree, local self-governing bodies and voluntary social welfare organisations. A great deal of leadership, organisation and cooperation are, therefore, called for. One important aspect of the problem relates to the relationship between the political leadership which forms the government and the public services which carry out the administration. They have a common aim, the raising of standards of living through rapid economic and social development and better distribution of wealth and income; their functions are complementary, and neither can fulfil its part without the active help and trust of the other.

4. The processes through which political leadership emerges in a democratic system determine also the character of its responsibilities. Adult suffrage, party organisations, legislatures empowered to make laws and vote taxes and appropriations and the responsibility

of government to the legislature, are all different facets of a single purpose, namely, so to organise political life that those who attain power shall reflect the will of the people. When a party forms the government, it has to strive to carry as large a proportion of the people with it as possible. At all times the government has to try and maintain close contact with the needs of the people and to secure their support and cooperation for programmes designed to meet those needs. The political executive in charge of the government has thus a twofold responsibility to fulfil. Its principal task becomes one of assessing what the public desires, what its essential needs are, and how they may be met. In other words, its sphere is, in the main, one of policy and the principles that lie behind policy. The political executive has, therefore, to give special attention to the formulation of principles and policies in each field of activity. Secondly, it has to ensure that the principles and policies which are laid down are followed faithfully and, where discretion is vested, it is exercised in the public interest.

5. In the implementation of these responsibilities, there has to be devolution of power to large numbers of public servants who, as a body, constitute the administration. The public services stand outside the arena of political life. The security of tenure, expertise and knowledge and appreciation of the implications of different problems and programmes derived from experience of dealing with them over many years tends to give to the higher grades of public servants a considerable share in the shaping of policy. Their advice is always available to the government and they should be encouraged, as indeed it is their paramount duty, to tender advice without fear or favour. Even though their views generally influence decisions, their main role is to implement and to administer policies approved by the Government.

Policy and Administration

6. The influence of policy on the character of the administration is well understood. Errors of policy may be far-reaching in their effects and the most careful administration will not wholly compensate for them. In the management of public affairs failures in policy and failures in administration can be equally unfortunate. In some situations policy may be the more fundamental aspect, in others the administration. In recent years, the Central Government as well as State Governments have had to assume new responsibilities without always having the personnel and the experience for undertaking them. Sometimes they had no other choice and, indeed, it is inevitable that the responsibilities of the government should grow rapidly. Since trained manpower is limited, it is necessary that the relative importance of different objectives and the ability of the government to achieve them, should be carefully considered in determining the priorities. In the fields which are selected by the Government, it is important to remember that unless a policy which has been decided upon is pursued in a sustained manner, the administration can seldom be satisfactory. In relation to national planning the formulation of correct policy has an altogether crucial significance. In particular, it is important to ensure both at the Centre and in the States that individual economic programmes and proposals are carefully related to the requirements of national planning and the common national interest should always prevail over sectional and local claims.

7. The decline in the standards of administration which has taken place during the past few years points to the urgent need for carrying out administrative reforms. Important achievements stand to the credit of the Central and State Governments and the administration has undertaken large responsibilities. Nevertheless, it is true that numerous functions are now performed less efficiently than before. To some extent this is due to the fact that while the work falling to the administration has considerably increased, the strength of experienced personnel in the public services everywhere has been depleted and key personnel work under considerable strain and pressure. Growth in the responsibilities of government and in the expectations held by the people now call for a drive for improvement in the quality of the administration and in the service which it renders to the community. Each administrative authority under the government should hold itself responsible and work to a programme for bringing about such improvements as are needed in its organisation and in its performance. The significance of the present period in the economic and social development of the country should be fully recognised by those now engaged in administration, in particular, by the higher ranks of the public service. They have the opportunity, and upon them rests the obligation, which is both collective and individual, of helping to establish a structure of administration and a tradition of service which will be capable of fulfilling the national programme and will provide a sound basis for future advance. Ministers have of course a most important part to play in improving the administration. . The higher ranks of the administration are entitled to receive from them confidence and understanding and, in particular, steady support in reforming the system of administration and in re-organising it for the implementation of development programmes. It should be the combined and earnest effort of both, throughout the country, to effect those adjustments in outlook and in the methods of government as will enable each to give its best.

Three Groups of Problems

8. In the two chapters that follow we consider at some length the principal problems which arise in connection with the improvement and strengthening of the administration. These may broadly be divided into two groups. First, there are the problems bearing on the entire field of public administration, such as, for instance, the achievement of high levels of integrity, efficiency and economy. To these may be added the need for structural changes to raise the level of administration in the less advanced States and to equip the government with machinery to carry out its economic functions in a manner more adequate to its present responsibilities. In a second group, we may include problems which bear upon the administration of development programmes in the district. It is in the district that the administration comes into the most intimate touch with the citizen and development programmes become vital to the people. It is, therefore, necessary to consider questions such as the improvement of the machinery of general administration, on which so much else depends, the establishment of an appropriate agency of development at the village level, the coordination of development activities undertaken on behalf of government, the State agencies and, finally, questions such as regional coordination and supervision of district development programmes and the place of social service agencies in the reconstruction of rural life.

9. Even if the government does all that lies in its power to improve the administration, the success of planning under democratic conditions will still depend upon the measure in which the association and co-operation of the people is enlisted in formulating and implementing various programmes. The experience of the past few years brings out clearly the need for a reorientation in outlook on the part of officials as well as of non-official representatives. In each field of activity there is a great deal of assistance which the people can render to the administration and, in a later chapter, we consider the directions in which such co-operation may be developed as part of the Five Year Plan. As the administration responds to the needs and the wishes of the public, the latter may be expected to react with a positive desire to assist the administration. In the context of the Five Year Plan, it is especially pertinent to remember that the distinction between official and non-official workers is related to the content of their respective responsibility ; no longer to the objectives they subserve.

CHAPTER VI

REFORM OF PUBLIC ADMINISTRATION

ADMINISTRATIVE LEADERSHIP

The principal objectives to be achieved in public administration are integrity, efficiency, economy and public co-operation. These aims are closely inter-related and, to some extent, inter-dependent. Measures designed to secure any one of the objectives help to achieve others as well. The problem, however, has to be approached simultaneously from several directions. The end we seek is service of the community through good administration. That service, more especially in a State, which aims to become a Welfare State, depends on the goodwill, appreciation and co-operation of the public. Co-operation and goodwill are obtained when there is a belief in the integrity and efficiency of the administration.

2. The responsibility of the higher ranks of the public services for improving administration in this respect from within has already been emphasized. Cabinets have to provide the machinery and the administrative leadership which can exert itself in favour of reform and improvement. In the Central Government, the object could perhaps be promoted best by placing the Secretary to the Cabinet in a position analogous to that of the Permanent Secretary to the Treasury in the United Kingdom. To some extent this has already been achieved. The Cabinet Secretary should thus become the principal official adviser to the Cabinet and to the Prime Minister and other Ministers on important problems of administration. In the States, the Chief Secretary should fill an analogous role. He might be relieved of some of his routine duties so that he could give greater attention to the problems of co-ordination and administration.

INTEGRITY

3. Integrity in public affairs and administration is essential and there must therefore be an insistence on it in every branch of public activity. The influence of corruption is insidious. It not only inflicts wrongs which are difficult to redress, but it undermines the structure of administration and the confidence of the public in the administration. There must, therefore, be a continuous war against every species of corruption within the administration as well as in public life generally and the methods to root out this evil should be constantly reviewed.

4. The opportunity for corruption in various forms might arise almost anywhere in the administration, but it exists in a larger measure in some fields of public activity than in others. It is more difficult to detect where it is collusive. As a rule, where policy is clearly prescribed and the principles on which claims may be determined admit of no doubt, the scope for corruption is small. Vagueness of policy or frequent changes in it have the effect of

increasing the scope for corruption. In recent years, the shortage of essential supplies, which occurred from time to time, led to an increase of corrupt practices. The co-operation of the public is very necessary in order to eradicate this evil.

5. Stable Governments are in a better position to deal with such corrupt practices than unstable governments, where there is a tendency to remain in power by adopting devious methods. In such circumstances, some officials may be willing to compromise themselves to gain their own ends. Ordinarily, public servants are sufficiently protected to be able to resist unfair political influence. Frequently, however, the remedy comes long after the event. Some measures to ensure standards in public life when these are grossly abused are necessary in the interest of democratic government itself. Some machinery for this purpose should be devised in order to enquire into cases of alleged misconduct on the part of persons who hold any office, political or other. Where there is a *prima facie* case for an enquiry, such an enquiry should be held in order to find out and establish facts. If the facts thus ascertained point to a case of serious misconduct, other steps will follow. It may be necessary to have legislation for this purpose. Action under such legislation should only be taken at the instance of a responsible authority, that is, the Central Government or a State Government. In practice, the occasions requiring such a reference would be rare, but the possibility of such a reference might prove a wholesome influence.

6. The law relating to offences involving corruption has been recently strengthened. The Prevention of Corruption Act, 1947, provides for the offence of criminal misconduct on the part of public servants in the discharge of official duty and, besides prescribing enhanced punishment, makes offences under sections 161 and 165 of the Indian Penal Code cognisable. The legislation has now been extended to cover cases of those who offer gratification to public servants. It also provides for cases in which a public servant may be found to have come into possession of pecuniary resources of income which he cannot account for satisfactorily. It does not, however, provide for those cases in which a public servant's near relations may have been found to have become suddenly rich. We suggest that the possibility of removing this lacuna should be studied and the necessary legislation undertaken. Similarly, it would be useful to consider whether public servants should be required to furnish a return each year concerning movable assets acquired by them or their near relations during the preceding year. The present practice in this respect is confined to returns of immovable property.

7. Certain other suggestions have been made recently for dealing with the problem of corruption in government offices. It has been proposed, for instance, that since corruption is often difficult to prove and firm action is essential, the reputation of a public servant may be regarded as almost conclusive evidence of his integrity. It is true enough that the integrity of an honest public servant is seldom called into question, but instances to the contrary are known to have occurred. It cannot always be presupposed that persons making allegations would do so with a sense of responsibility. In relying on reputation, there certainly is risk of demoralising the public service. On the other hand, as a matter of ordinary administrative practice, an official who does not have a reputation for honesty should not be

placed in a position in which there is considerable scope for discretion. The suggestion has also been made that intelligence organisations for tracing and investigating offences involving corruption should be strengthened. We agree that the special police establishment of the Government of India should be equipped not only to investigate offences in which the Central Government is directly interested but also to deal with important cases in the States, when local agencies need assistance or have to be supplemented.

8. The proposal has also been made that where specific allegations of corruption are made in the press against an individual public servant by name, he should be expected to clear his name by taking the matter to the courts. His legal expenses could be sanctioned on the understanding that if he lost his case, he would have to reimburse the government and if damages were awarded to him the cost would be the first charge on them. We consider that in such cases the first step should be a preliminary and confidential enquiry by a senior officer. On his report it could be determined whether the circumstances justified prosecution by the government or merely permission or even a direction to an officer to clear his name in a court of law. If the second course is decided upon the suggestion mentioned above about legal expenses could be adopted. What is important, however, is that in each case it is the government which should determine the nature of the action which any allegations call for.

9. Apart from prosecutions in courts, it is often felt that the government's own machinery for departmental enquiries needs to be improved. The principal complaint is that departmental enquiries drag on for long periods. To the extent this complaint is justified, it is to be ascribed largely to the fact that senior officers who conduct departmental enquiries are frequently so preoccupied with other duties that they cannot give sufficient attention to the enquiries. Sometimes enquiring officers are not familiar enough with the procedure and may not appreciate fully the difference between a departmental enquiry and a trial in a criminal court. Other factors which may cause delay may be the need for consulting the Public Service Commission and the time required for the administrative authorities to make up their minds whether the findings of an enquiry officer are to be accepted and, if so, what the punishment should be. The Government of India have recently framed detailed instructions for expediting departmental enquiries.

10. In recent years, perhaps the most conspicuous areas of corruption have been those in which businessmen had to apply for permits and licences. Supervision and vigilance within the administration were inadequate and illegitimate gains were undoubtedly made. Though less is at present heard on the subject, the need for vigilance and drastic measures continues. It is always implicit in the unwritten code of conduct for those who hold responsible positions, whether political or official, that the public should always have absolute confidence in their disinterestedness and impartiality. In their social relations and all their dealings, they must, therefore, be especially careful to see that there is no ground or occasion to suggest that some, individuals have greater access to or influence with them than others. In this connection, the recent growth of the practice among business firms of employing relations or friends of friends of influential persons as "contact men" needs to be discouraged.

11. The measures which have been listed so far will help to maintain the conditions under which it should be possible for the government to enforce a high level of integrity. While these measures are necessary, the main attack on corruption must be by ensuring efficiency in every branch of the administration. We may refer here, in particular, to the following suggestions :

(1) Heads of departments should keep under constant review possibilities for corruption which current policies and procedures may provide and should maintain a watchful eye on the extent and forms of corruption which may, at any time, prevail within their organisations. If, through the procedures they lay down, they provide that individual claims or requests are dealt with to the maximum extent possible through clearly stated and well-understood rules or principles, they will be able to do much to check the growth of conditions within their organisations in which corruption becomes either an easy risk or a risk worth taking ;

(2) One of the most important sources of corruption is delay in the disposal of cases or applications. The delay may occur on account of excessive concentration of functions or authority, insufficient staff, poor quality of personnel, lack of clear policy or directions or other similar reasons. In each organisation the sources of delay should be carefully examined and the necessary action taken ;

(3) In positions in which there is greater scope for corruption, the choice of officials should be made with special care ; and

(4) Laxity on the part of employees of government is often due to the fact that honest and good work are not sufficiently rewarded and inefficiency and dishonesty are not sufficiently penalised. Devising means to encourage the honest should, therefore, be a matter of special concern in every administrative organisation which is exposed to any considerable risk of corruption.

We may also refer to the need for rousing public opinion to the importance of eliminating corruption and of public co-operation in maintaining high levels of integrity in the administration of all government activities.

" Efficiency

12. The problems of efficient administration converge primarily on men and on methods. The present state of administrative efficiency has been recently described in the following words by an experienced observer :

"The impressions of a recent tour through the larger portion of the country, combined with many years of official and non-official experience , lead to the conclusion that the machine, though sound in essentials and capable after improvement of undertaking arduous tasks, is at the present moment run-down. The work allotted to it has increased, the quality of its output has deteriorated. The parts removed from it have, in many instances, been replaced by those of inferior

> workmanship. The edge has been taken off through strain and, occasionally rough treatment, of many of those that remain. The tenter too is new, often impatient and inefficient. Coordination is frequently wanting. For reasons, some within and many beyond the machine's control, efficiency is undoubtedly impaired. All in all, there is considerable room for improvement."

Both in the Central Government and in the States, a small number of public servants carry a heavy burden of responsibility without adequate assistance. Much of their time has to be given to work which was formerly done at lower levels. Increasingly, while each agency of government is accepting new responsibilities, the stage at which effective decisions are taken within any department is being pushed upwards. This has cumulative effects in asmuch as the process affects the entire business of government and results in loss of efficiency both in the making of policy and in its execution. For the administrative machine to be equal to the problems which beset it, many changes in methods of work and organisation and an outlook of innovation are called for.

13. During recent years, mainly because new responsibilities have had to be assumed or new policies evolved, secretariat departments have had to take up an increasing amount of original work. The line between the work of a secretariat department and an authority subordinate to it is not always easy to draw. It would be useful if the Central Government could undertake a systematic review of the new functions which secretariat offices have accepted during the past few years and consider whether some of them, at any rate, could not now be made over to subordinate authorities. A similar review might be useful in the States. Where separate departments or other executive organisations exist, it is essential that the heads of a department or attached or subordinate office should be able to function with reasonable freedom and initiative and, at the same time, with the knowledge that he has the Ministry's confidence. The problem generally resolves itself into one of establishing a clear line of responsibility between a secretariat and a department and, secondly, to one of enabling departments to function with the maximum effectiveness.

PERSONNEL

14. The requirements of personnel may be broadly divided into three categories : (*a*) administrative (including economic), (*b*) scientific and technical, and (*c*) subordinate and clerical. The administrative personnel consists, in the main, of the members of the Indian Civil Service and of its successor, the Indian Administrative Service, and in the States includes also members of the State administrative services. In the States, besides the ordinary work of the administration, the administrative services provide personnel for executive duties in the field of development. Their numbers are, however, small; and complementary personnel for technical jobs is inadequate. At the Centre, there are not enough men with the necessary experience and qualifications (*a*) to undertake work in connection with the framing of economic policy and the study of economic problems and (*b*) to manage public enterprises in the field of industry or handle executive duties relating to the regulation and control of trade

and industry. In the ranks of the subordinate and clerical personnel also there are gaps, but these are associated not so much with numbers, as with lack of experience, lack of training and supervision and, to some extent, with faulty methods of work and organisation.

15. The steps which have been already taken for the organisation of the Indian Administrative Service provide for trained administrative personnel for manning responsible posts at the Centre and in the States. As the functions of government expand, there are three directions in which it will be necessary to supplement the existing arrangements :

(*i*) for doing work which may broadly be described as economic policy and administration ;

(*ii*) for managing industrial enterprises belonging to the Central or State Governments; and

(*iii*) for work connected with development, land reform and food administration.

In the first two fields of activity the need will be primarily that of the Central Government ; the third lies mainly in the States. Proposals for constituting an economic civil service have been made from time to time. Sometimes the expression is employed to describe personnel for work connected with economic policy and administration, sometimes for personnel required for the management of commercial and industrial enterprises undertaken by the government and sometimes also for staff required for economic and statistical intelligence. It is important to distinguish these three categories. So far as the first category is concerned, the principal problem is to secure that the administrative services should have a sufficient number of officers with the necessary economic experience and background.

16. To achieve this object, we have three proposals to make. In the first place, individuals with high academic qualifications or special experience in the economic field should be drawn into the administrative service. There should be scope for drawing persons so equipped into the administrative service at age limits somewhat above those at which initial recruitment is made through competitive examination. In this connection, a higher age limit, up to 30 years, for instance, could be considered. Officers selected in this manner should first be put through the necessary administrative training. Secondly, a proportion of the junior officers of the administrative service should be selected at an early stage in their careers and given intensive training in the economic field within the Government, with suitable business houses and, if necessary, abroad. Thirdly, the practice already exists and could be further developed for obtaining for responsible senior positions individuals with special experience and knowledge from other fields such as universities, banking and finance and industry. For securing personnel in the second category, proposals for constituting an industrial management cadre are at present under consideration. Similarly, the question of finding personnel for economic and statistical intelligence is under consideration and proposals are expected to be formulated in the near future. The problem of obtaining personnel in adequate numbers for responsibilities connected with development programmes, land reform and food administration in the

States may also call for supplementary recruitment, depending upon the situation in individual States. In the main, however, these responsibilities have to be undertaken by officers with experience of revenue and development work in the districts.

17. Recruitment to posts which are either permanent or have to be filled for more than relatively short periods is ordinarily made by a public service commission. There has, however, been no objective assessment yet for the country as a whole of the way in which these arrangements have worked. The need for action in some directions is, however, already apparent. In the first place, the experience and observations of the Union and State Public Service Commissions about the quality of candidates interviewed by them or applying to them should be analysed and communicated to universities and other educational authorities. These reports should form the basis of an annual review which should in turn be linked with programmes of improvement in the field of education. Secondly, both at the Centre and in the States there should be greater contact and exchange of opinion between the Public Service Commission and the department on whose behalf recruitment is undertaken. The advice of the Public Service Commission could be of considerable assistance to administrators in framing specifications for various posts. Similarly, appreciation of their needs and difficulties could be of help to the Public Service Commission. Thirdly, a coordinated approach between the Public Service Commission and the administrative authorities could, on the one hand, lead to a marked reduction in temporary and *ad hoc* recruitment, which is still common, and, on the other, could expedite the processes of recruitment which tend to take perhaps longer than might be absolutely necessary. In the fourth place, from amongst candidates who appear before Public Service Commissions but are not selected for particular posts, it should be possible to prepare lists of suitably qualified persons whom administrative authorities could consider for temporary appointment to meet their urgent requirements. Temporary appointments are frequently necessary, but reduction in their number would be desirable. We would also suggest that methods and procedures adopted for selection to different kinds of posts—administrative, technical, scientific etc.,—should be continually reassessed and adapted to meet new requirements.

18. Next to recruitment, the training of personnel has considerable bearing on administrative efficiency. Each type of work in the government requires a programme of training suited to it. In general, in all branches of administration it is necessary to provide for the training of personnel at the commencement of service as well as at appropriate intervals in later years. In this connection, we would emphasise the importance of careful grounding in revenue and development administration for recruits to the Indian Administrative Service and the State administrative services. The training of these officers should be entrusted to experienced Collectors. During recent years, this subject has not received as much attention as it deserves. This circumstance makes it all the more necessary to ensure that the training during probation of new recruits to the Indian Administrative Service should be as well organised as possible.

19. Probationers selected for the Indian Administrative Service are given their initial training in the Indian Administrative Service Training School at Delhi. The Establishment Officer of the Government of India has hitherto served as the head of this institution in addition

to his own duties. In the early years this combination of duties had some advantage, but in the future it is necessary that the Director or Principal of this institution should be a whole-time officer. As the probationers are drawn from all over the country, training in the school offers a valuable opportunity of impressing on them a broad national outlook. The school should be developed, not merely as a centre for training officers of the administrative service, but also as a centre of studies in public administration generally. The post of Director should be filled by carefully selected officers who are appointed to it in the course of their service careers and, after they have served for a period, move on the other posts. Since traditions have to be established for the future, it would be desirable for the first whole-time incumbent to the post of Director to serve for a period of at least five years. It might be possible for the Central Government to assign to him an official responsibility for seeing that all States have proper training programmes for their administrative services. This would require the Director to tour different States from time to time. The school could also be organised as a centre for refresher courses for senior administrative officers from the States and from the Central Government at stated intervals in their service. In other words, it should be developed as a kind of staff college for the higher grades of administrative persons serving both at the Centre and in the States.

20. In connection with its secretariat reorganisation schemes, certain arrangements for the training of secretariat staff have already been introduced in the Central Government. The stage, has, however, reached when the problems of training need the attention of a specially designated Director of Training, whose responsibility it should be to organise systematic training programmes and refresher courses for different grades of employees. There are certain directions in which the scope for training should be widened. For instance, for officers concerned with the administration of economic activities, there should be a regular scheme for training in well-established business organisations. Finally, it is necessary to recognise that in the future, only a small number of recruits to the higher services will have had the opportunity of training abroad before they join service. Full advantage should, therefore, be taken of the various technical assistance schemes which are now available for providing opportunities for specialised training to selected officials. In connection with the administration of these schemes, there is need for greater co-ordination between the Central Ministries as well as between the Central Government and the States, so that the training programmes are adjusted to the needs of development in different fields and the selection of officials for training is made with the necessary care. In addition to these schemes, we recommend that public servants should be encouraged to take advantage of study leave concessions at appropriate stages in their careers.

METHODS

21. However carefully personnel may be selected and trained when they enter upon their duties, unless the methods of work employed are sound and well-conceived, there is much less of efficiency. So long as the magnitude of government's business was small and personnel for exercising supervision was available in adequate measure, it was possible to continue the traditional methods of transacting business. This situation no longer exists. Careful

study and review of organisation and methods can lead to greater economy and efficiency. We recommend that the Central Government should have an organisation and methods division which should work in close co-operation with the personnel sections in the different Ministries. In the States also, units for the study of organisation and methods are needed and the Central Government should provide the necessary facilities for training. Among the problems (which need early attention in the field of methods) are the problems of simplifying office procedures, elimination of delays, the system of records maintained in the Central Ministries, the movement of files, and procedures for efficiency audit in organisations of different kinds. Other fields of study might be, for instance, techniques connected with inter-departmental conferences, delegation of responsibilities to different grades of officials, relations between the planning units and the executive and administrative sections of different organisations, the use of space, working conditions of the lower grade employees of government, and the organisation of messenger services in place of the present archaic methods for the employment and use of peons in government offices.

22. Closely associated with the question of training and methods are the arrangements in government offices for supervision and inspection. Senior officers can do much to improve efficiency by spending a portion of their time in inspecting their offices from time to time. The inspections need not always be formal ; indeed, surprise checks have a special value. The causes of delay would frequently come to light and be remedied if senior officers and even ministers occasionally examined files from the point of view of the time taken before conclusions are reached or the necessary action taken. In many departments there is not enough contact between officers and the lower grade personnel, nor are there any intermediate officials who take new recruits in hand, introduce them to their work, and help them to understand the functions of the organisation in the wider setting of the government. This is an aspect to which each organisation in the government should pay careful attention. Lack of the necessary human relations between different grades of public employees leads, in turn, to a certain neglect of the welfare needs of lower grade staff. Apart from what the government may be able to do for them by way of housing or medical facilities, there is much that individual ministries or departments can do for their employees through mutual self-help schemes.

Financial Control and Economy

23. We have considered a number of factors bearing on the efficiency of administration. Many of these relate to matters of detail and application rather than of principle. There are three other aspects which involve questions of general approach and to which it may be useful to refer. These are : (*a*) the present system of financial control ; (*b*) the present arrangements within the administration for promoting good work and discouraging bad work ; and (*c*) the need for careful assessment of results.

24. A plan of economic development necessarily postulates substantial increase in public expenditure. The importance of securing economy and sound financial control which is already generally recognised is, therefore, further emphasised by the needs of national

planning. The objects of financial control are to ensure (1) that no wastage of resources occurs, (2) that public money is not misapplied, and (3) that for the money spent adequate results are obtained. Within the administration the responsibility for ensuring that these conditions are observed rests equally upon the administrative authorities and upon finance departments although, necessarily, the latter have special duties to discharge. There is need always for close co-operation at each level between the financial and the administrative authorities so that, if any difficulties are encountered, they can be removed through personal consultation at an early stage in the formulation of a proposal and before commitments are entered into. Financial procedures which, on the one hand, secure adequate control and, on the other, avoid too great an interference in carrying out their own programmes, are essential to the efficient execution of the Five Year Plan. The subject, however, requires careful consideration and specific remedies can only be proposed after detailed study with reference to local procedures and problems. We, therefore, suggest that both in the Central Government and in the States the existing arrangements should be reviewed by the finance departments in co-operation with the Planning authorities.

25. It is axiomatic that in every government department or organisation there s always some room for economy. Economy is a continuous process and, in addition to inculcating it as a habit of mind among all public servants, from time to time systematic reviews of expenditure incurred in any office should be undertaken. Within any organisation, perhaps the principal source of wasteful expenditure lies in the failure to plan carefully and in detail in advance of execution. F r too many projects tend to receive acceptance in principle or in respect of their preliminary stages before they are in fact ripe for implementation. Financial control should concern itself not only with the minutiae of expenditure, but even more with the scheme of priorities on which a project is based and with the appraisement of the stage at which a project may be regarded as having been adequately investigated to justify commencement of execution. In relation to large projects, in particular, the more glaring mistakes are frequently made in the beginning rather than in the course of execution when, despite attempts to control and regulate, it may become too late to withdraw.

INCENTIVES

26. It has been observed that during the past few years, the proportion of those who do their work in a routine way, without desire to do better, has probably increased. To some extent this may have been due to the uncertainty of employment which was felt by numerous temporary employees. The effect of recent decisions has, however, been to reduce the number of temporary posts and to facilitate the selection of temporary employees with good records for permanent and quasi-permanent positions. Expansion in administrative organisations accompanied by diminution of supervision and guidance have also affected staff efficiency. The economic conditions of fixed income receivers of the middle and lower middle

classes in particular during recent years have undoubtedly been trying. While all these factors are relevant to an understanding of the present state of the administrative machine, they do not fully explain why incentives for good work have become so much weaker than before. In this connection there are two factors which seem to stand out.

27. The arrangements for assessing the work of an individual official and for encouraging him if his work is good and warning or punishing him if his work is bad, are unsatisfactory and have to be placed on a sound basis. Reports on the work of individual officials have tended to become less specific and less objective than before and the easy course of neither blaming nor praising tends frequently to be adopted. Accurate reporting on individuals is possible when there is systematic supervision and attention to the work expected of an official. It also appears that sufficient notice has not always been taken of defaults of duty and there has been too much toleration with poor performance. This has tended to blur the distinction in terms of reward and punishment between those who are eager and painstaking and those who are indolent and careless.

28. While considerations of seniority are important, given a satisfactory system of appraisement, in certain cadres there should be scope for promotion more rapid and more conspicuous than the normal rules provide for. This is a principle of wide application and is already being applied in some cases. The possibility of extending the practice should be explored so that, in each field a person who has the requisite ability can feel assured that if he does outstanding work, the system itself provides adequately for promotion to higher levels of responsibility. There could also be tests for promotions to particular grades in certain related cadres or services, so that men who start low in the public service can jump grades according to their ability.

Evaluation

29. With increased investment on development, much more attention to the systematic assessment and evaluation of results from public expenditure is now called for than was probably necessary in the past. The problem arises in almost every project included in the Five Year Plan in the Central Government as well as in the States. In each case, the machinery for review of results has to be related to its nature and organisation. With every important programme provision should always be made for assessment of results. For instance, there should be an annual report and also intermediate periodical reports. In this connection, it may be suggested that reports should confine themselves to items of information which are intrinsically important and should not become too elaborate. Frequently reports which are received do not receive the necessary study and analysis, and no attempt is made to draw practical conclusions from them. Reports which are called for by the Central Ministries from the States or by departments in the States from the districts should invariably be the basis of documents which are submitted to the higher authorities and are also made available to the project authorities from whose material they are compiled and later to the public. For important projects or on aspects which need close scrutiny, wherever possible, there should be

arrangements for independent inspection followed by detailed reviews in consultation with the project authorities. Systematic evaluation should become a normal administrative practice in all branches of public activity. With the object of developing the techniques of evaluation a beginning has now been made with the establishment of an independent evaluation organisation under the Planning Commission for community projects and other intensive area development programmes.

Strengthening Administration in the States

30. The implementation of the Five Year Plan calls for well-organised development services in the States. Some States are not at all well placed in this respect, in particular, those which have been recently constituted or may be small in size and resources. Viewing the country as a whole, there is scarcely any field of development in the States or any level of responsibility for which a sufficient number of qualified persons are available. As programmes develop, the shortage will become even more acute. To a limited extent, the problem may be met by means of joint cadres with neighbouring States or by transfers on deputation from other States but other steps are also necessary. For instance, in consultation with the States which may desire to participate, the Central Government should investigate the possibility of establishing Central development cadres in fields of technical development, such as agriculture, engineering, forests and public health. We are not considering here the question of All-India Services in these fields, but merely how co-operative arrangements could be made by the Central Government in consultation with the States concerned for the establishment of joint cadres for maintaining the supply of qualified personnel for development in the States.

31. Since the Central Government obtains its own higher personnel mainly from the States, the manner in which it selects officers required at the Centre has considerable bearing on morale and efficiency among officers in the States. In this connection, we would make three suggestions :—

(1) The accepted principle that service at the Centre should ordinarily be in the nature of a tenure assignment should be adhered to in practice for different grades of officers, both administrative and technical;

(2) Reports on the work of all officers in the Indian Civil Service and the Indian Administrative Service should be periodically reviewed by the Central Government's establishment board ;

(3) In respect of technical personnel in different fields, for instance, engineering, medical and public health, agriculture, forests, etc., the Central Government has to obtain officers mainly on deputation from State Governments. The normal course should be for the Central Government to ascertain from different States particulars of officers whom they can make available for any post. Selection should then be made, not by any single authority, but by appropriately

constituted selection boards. For posts of certain grades, it may be useful also to associate with these boards one or two experienced officers from the States.

ADMINISTRATION OF PUBLIC ENTERPRISES

32. Industrial undertakings owned and managed on behalf of the State are a comparatively new development, the only exceptions being the ordnance factories, the railways and the Hindustan Aircraft. Factories for the manufacture of telephones, telephone cables and machine tools are in different stages of completion. The most important undertaking which has been recently completed is the fertiliser factory at Sindri. The Hindustan Shipyard at Visakhapatnam and the Government Housing Factory are examples of mixed enterprises in which the State has a predominant share. Work on projects for the manufacture of penicillin and D.D.T., which were recently sanctioned, is still in its early stages. The National Instruments Factory is a continuation of the Mathematical Instruments Office. Plans for the establishment of a steel plant are in an advanced stage. The Five Year Plan contains financial provision for establishing certain new basic industries. The setting up of a Ministry of Production a few months ago to take charge of most of the industrial undertakings of the Central Government is proof of recognition of the growing importance of State industrial under-takings in the economic development of the country, especially in the field of basic industries.

33. Industrial undertakings of the Central Government have been organised as joint stock companies, each with its own board of directors. The boards include representatives of the Government as well as some representatives drawn from business and industry. Sufficient experience has not yet been gained to permit any conclusions regarding the working of different undertakings or the results of the present pattern of organisation and management. As experience develops and new problems arise, further changes are to be expected. Since each industrial enterprise presents problems peculiar to itself, it is necessary to have separate boards of directors for different undertakings. There is need also for a central board which could give detailed attention and advise the Government in respect of questions of general mportance for the public sector as a whole, such as personnel for industrial management, financial and accounting problems, price policies, investment programmes etc. The success of public enterprisers in the field of industry has great significance for industrial development in the future, since the steady expansion of the public sector is inherent in the development which is now being planned. We, therefore, recommend the early establishment of a single central board which will concern itself with the larger problems of policy, management and organisation for the industrial undertakings of the Central Government.

CHAPTER VII

ADMINISTRATION OF DISTRICT DEVELOPMENT PROGRAMMES

Effect of Recent Changes

The structure of administration developed during the past century was based upon th district as the principal unit with the district officer as the government's principal representative in touch with the people. Besides being in control of the administration of law and order and revenue in the district, the district officer held a coordinating responsibility for the activities of all departmental agencies within the district. In the heirarchy of administration, he enjoyed status and powers which gave him considerable influence over the local population. In the Indian States also, the administration was organised through the district, but in the majority of States there were no stable public services and personal rule prevailed, so that the position of the district officer was generally much less important than in the provinces.

2. The district is still the most important single unit of administration. As before, the maintenance of law and order and the collection of land revenue remain the district officer's primary duties. Recent developments have, however, altered his position and emphasised the need for giving an altogether fresh orientation to district administration. The maintenance of law and order must always be an important obligation, but increasingly district administration derives its significance from its role in developing the resources and raising the standard of living of the people of the district. The district officer's position is intermediate between the State Government, whose policy is determined mainly by a political executive responsible to a legislature elected by the people, and local self-governing bodies which are also elected by the people. For many years district boards, municipalities and town committees have existed as institutions of local self government in most of the States, but their development programmes have now to be linked up with those of the district and the States. In the past, for the limited functions with which the district officer was especially concerned, a democratic village agency was scarcely necessary. In different ways the administration was supported in rural areas by influential persons such as *zamindars*, *zaildars*, village headmen and the like. These non-officials helped police and revenue administration in the district, but there was not much call on them for creating enthusiasm for development programmes, which were then extremely restricted in scope. Though they had some local influence of their own, they were largely dependent on the authority which the administration conferred on them and invariably they had to reckon with local rivals for power and official favour. In the closing years of British rule this system no longer served the purpose for which it was created and was seen to be breaking down almost everywhere.

3. Certain other tendencies were also in evidence in the field of district administration. Over many years, for fields of activity such as agriculture, co-operation, animal husbandry, forests, industries, etc., separate departments had grown up and established their own

separate agencies for work in the districts. To the extent to which these departments had functions of a technical character, they were certainly necessary. In rural areas, however, a situation developed in which each department attempted to reach the cultivator through its own personnel. As a rule, the staff was thinly spread and, at the lowest levels, it was poorly paid and equipped. On account of the limited character of the development which was aimed at, there was not much in the work of these officials to inspire them with enthusiasm. The development departments did not maintain sufficient liaison between their various activities and their officials frequently confessed failure either by pleading for more punitive powers or for greater assistance from the revenue administration. Although some useful results were secured here and there, and those who were progressive or influential took advantage of the services provided by the government, development activities in the district lacked unity of approach and were always hampered for want of sufficient field staff for carrying out their extension work.

4. During the past decade the machinery of administration in the district has been severely tested in another direction also, namely, the procurement and distribution of foodgrains and the distribution of civil supplies. When the war ended, the district administration over the larger part of the country, was well attuned to the discharge of these responsibilities. With the decontrol of food in 1948, the grip of the administration over the problems of supply weakened and, although controls were reimposed subsequently, their administration has been distinctly less satisfactory than before. Frequent changes in the administration of food control have been a disorganising factor in district administration. Operations which should become matters of routine, in whose performance there should be a steady increase in efficiency, have suffered from the *ad hoc* character of changes which have sometimes been instituted without sufficient regard to administrative implications. In such circumstances, a difficult food situation may divert the attention of the entire district administration and affect both public relations and the execution of development programmes.

5. Another set of problems which the district administration faces fall within the field of land reform, a subject which is discussed at some length in a later chapter. Wherever *zamindari* has been abolished, it is necessary to create a new system of village administration and, frequently also, to prepare a new system of village records. This presents an immense administrative task. Elsewhere, when new restrictions and limitations are imposed upon the larger holders of land and new rights conferred upon tenants and workers, their implementation calls for sustained administrative action at various levels reaching down to the village and, what is not less important, they call for close control and supervision. When administrative arrangements are not adequate, measures of land reform do not fulfil their real purpose.

6. To the factors which have been described, one more may be added. The quality of personnel charged with administrative duties in the districts varies greatly. While examples of initiative and independence of judgment are by no means wanting, it will be correct to say that, in common with other spheres of administration, the majority of districts are now administered less adequately than before. Many experienced persons—their number was always limited and was further reduced on account of the Partition of the country—have

moved to secretariats and to the headquarters of departments. The burden of duties falling upon State Governments has increased to such an extent and so many new functions have had to be assumed that the districts seldom secure at the higher levels the quality of personnel which their problems call for. Yet, it is on the record of service which the administration can render to the people in villages and towns that governments have to justify themselves. The institution of the Indian Administrative Service in succession to the Indian Civil Service is an important step in the direction of providing in the districts a sufficient number of well-trained and well-equipped officers who can offer requisite leadership in district administration.

7. In brief, from now on, the primary emphasis in district administration has to be on the implementation of development programmes in close co-operation and with the active support of the people. Apart from the problem of finding personnel for the higher positions in the district and the problem of adapting the administrative system to the temper of democratic government, the reorganisation of district administration has to provide for—

(1) strengthening and improvement of the machinery of general administration ;

(2) establishment of an appropriate agency for development at the village level which derives its authority from the village community ;

(3) integration of activities of various development departments in the district and the provision of a common extension organisation ;

(4) linking up, in relation to all development work, of local self-governing institutions with the administrative agencies of the State Government ; and

(5) regional coordination and supervision of district development programmes.

If it were a matter only of machinery and structure, the reorganisation of the district administration would remain incomplete and the results would fall short of expectations. In the implementation of development programmes, as indeed in other spheres, public co-operation has a vital part to play. The subject is considered more fully in the following chapter. We may mention here one aspect of it, namely, the need to ensure that in the scheme of reorganisation of administration in the district, there is a field for recognised social service agencies for participating in development programmes.

Strengthening the General Administration.

8. The general administrative machinery of government constitutes, as before, the backbone of the entire structure of administration. The quality of the general administration has a bearing on the lives of large numbers of persons. In the measure in which the elementary obligations of government are discharged efficiently and justly, the government becomes more capable of undertaking economic and social development and of securing the willing co-operation and support of the people. The need for an adequate administrative service to provide personnel for positions carrying higher responsibilities is now being met through the Indian Administrative Service and the State administrative services. In the course of a few years, it may be expected that the existing deficiencies of personnel for these positions will be removed.

There are, however, three directions in which the general administrative organisation of the district needs to be strengthened urgently. A word may be added here about the position of the district officer in the scheme of administration. In the past few years the work of the district has expanded considerably and has also become more complex than before. The first effect of proposals to strengthen and reorganise the administration of the district, especially from the aspect of development, will be to increase the district officer's work and responsibility still further. It is, therefore, important to give him the assistance of a senior officer to enable him to devote attention to development. Secondly, care should be taken to see that too much of the district officer's time is not taken up in matters such as formal attendance on higher authorities and submission of reports. In the third place, if additional work has to be undertaken in a district over a period, for instance, in connection with a famine, or a land reform measure, instead of relying too much on the normal machinery of the administration, adequate assistance should be afforded.

9. In several States, there is an administrative cadre, commonly described as the State Civil Service or the Provincial Civil Service, which provides personnel for senior district posts involving revenue, executive or magisterial duties. It would assist the growth of efficient administration if there were liberal opportunities for the best among the personnel of the State services to enter the all-India service. Further the training of the personnel of the State administrative services should receive no less emphasis and attention than the training of those who enter the all-India services. A major share of the responsible but detailed administrative work in the district is done by members of the State administrative services, and it falls mainly to them to coordinate the activities of different branches of the administration and to win the co-operation of the people in carrying out development programmes.

10. In *ryotwari* and temporarily settled areas, the district administration has been held generally to be stronger, better organised and more capable of undertaking new responsibilities than, for instance, in the permanently settled areas. The difference is due, mainly, to the existence of village revenue officials described variously as *patwari*, *talati* or *karnam*. In the permanently settled and *jagirdari* areas, the implementation of development programmes as well as of measures of land reform is frequently impeded for want of village revenue officials. It is, therefore, a task of the first importance to recruit and train personnel in these areas for village revenue establishments. Many States are already taking steps in this direction, but these need greater emphasis and the process has to be hastened.

11. The third direction in which the general administration of the district has to be strengthened relates to the territorial units through which district work is now organised. In *ryotwari* areas, between the village *patwari* and the district officer, it is common to have a revenue inspector in charge of a circle, a *tahsildar* or *mamlatdar* in charge of the tahsil or the taluk, and a subdivisional officer (or other revenue officer) in charge of more than one *tahsil* or *taluk*. In some permanently settled areas, there is no revenue machinery below the sub-division and the line of communication from the government to the people beyond the sub-divisional officer passes through the local police station. In certain other permanently resettled areas, below the subdivision, there is a union representating a group of villages. With the abolition of *zamindari*

the entire structure below the level of sub-divisional officer has to be completed. Some districts are so large that in the interest of efficient organisation they need to be further divided. As the Bengal Administration Enquiry Committee pointed out, there is no fixed formula for the ideal size of a district and much depends on the density of the population, the topography of the area and the nature and state of its communications. It might be useful for State Governments now to review the size of their existing districts from the point of view of efficient implementation of development programmes. Where no change in the size of the district is considered necessary, they might examine the possibility of establishing more sub-divisions. As a unit in district administration the sub-division is valuable from several points of view. The district officer is relieved of much routine work. For a great many transactions, the people are spared the trouble of travelling to district head-quarters. Junior officers holding charge of sub-divisions secure training in the exercise of responsibility and initiative. During their touring and field work they are also able to acquire intimate knowledge of the people. The creation of a more adequate number of sub-divisions is also justified by the need to link up local self-governing institutions with the administrative and development machinery of the State Government, on which subject some suggestions are offered in this chapter.

12. Training programmes for executive officials are organised with reference to the duties which they are expected to perform. Such training is, of course, always essential. In the re-orientation of the administration which is now called for, it is also necessary that, at an early stage in their careers, all revenue officials should receive special training in rural development work. In other words, just as members of the Indian Administrative Service or the State administrative services have to learn the work of the *patwari*, the circle revenue officer and the *tahsildar* in the course of their training, they should also learn the work of the village-level worker and of officers in charge of larger development units. Such training will enable the general administrative machinery of government in the district to assume the role in development work which we envisage for them under the Five Year Plan. In this connection, it may be suggested that since many district officers are new to their responsibilities in the field of development, it may be useful to give them a measure of guidance and orientation through occasional conferences, seminars and demonstrations.

Village Agency for Development

13. For many decades the village has been the primary unit for revenue and police administration but, as a social and economic organisation, it became weaker under British rule. As settled conditions developed, the village community became increasingly dependent on the administration and less able to manage its own affairs. Even in work undertaken by development departments the approach was nearly always to the individual, not to the village community, so that thirty years of development activity have influenced only a fraction of the population.

14. Legislation for setting up village panchayats exists in most of the States. Since independence, several States have revised their earlier enactments with the object of promoting the quicker development of panchayats and of giving to them a larger role than before. In

some of the newly merged territories similar action needs to be taken. Taking a general view, it may be said that panchayat legislation in India is marked by considerable boldness of thought and an earnest desire to make the village panchayat a vital base in the national structure. The legislation seeks to translate into action the directive principle in the Constitution that the States should take steps to organise village panchayats and endow them with such powers and authority as might be necessary to enable them to function as units of self-government. In the practical implementation of this principle some States have made considerable progress, but in the country as a whole much remains to be done. We suggest that each State should have a programme for establishing over a period of years panchayats for villages or groups of villages.

15. The functions of panchayats are conceived widely enough to permit them to comprehend most of the civic and economic activities of a village community. In addition, panchayats also have judicial functions. In practice, few panchayats discharge all the functions entrusted to them, and the activities of many of them suffer from local faction, lack of resources and want of guidance. Panchayats have helped social awakening, but they have not had the same success in raising the level of village life or in fostering self-help in the improvement of village conditions. In other words, although there are exceptions, the panchayat as an institution has not yet become the instrument of village reconstruction and development which it was intended to be. We believe that the panchayat will be able to perform its civic functions satisfactorily only if these are associated with an active process of development in which the village panchayat is itself given an effective part. Unless a village agency can assume responsibility and initiative for developing the resources of the village, it will be difficult to make a marked impression on rural life, for, only a village organisation representing the community as a whole can provide the necessary leadership. As the agencies of the State Government cannot easily approach each individual villager separately, progress depends largely on the existence of an active organisation in the village which can bring the people into common programmes to be carried out with the assistance of the administration.

16. Where both panchayats and co-operative societies exist, it is necessary to distinguish their respective functions in village life. Many co-operative credit societies are now being converted into multi-purpose societies, but multi-purpose operations are not yet widely spread. The functions of a co-operative society are governed by the objects for which it is constituted and are limited to the interest of its members. As co-operation develops, the movement will become increasingly representative of the village community. On the other hand, the panchayat is already intended to represent the entire village community, including those who are landless or are not engaged in cultivation, and has to meet pressures from all sections of the population. Secondly, a panchayat has a larger authority, both in tradition and in law, over the affairs of a village than any other organisation could have. If, by linking up the village panchayat closely with development programmes, village leadership can be successfully developed, co-operative activity will also be strengthened.

17. Under the existing legislation panchayats are already vested with many of the functions and powers which they need in order to play their part in organising village development programmes. State Governments may consider any amendments that may be required in panchayat legislation to enable panchayats to assume responsibility for such functions as :—

(1) framing programmes of production for the village ;

(2) framing budgets of requirements for supplies and finance needed for carrying out the programmes ;

(3) acting as the channel through which, increasingly, government's assistance other than assistance which is given through agencies like co-operatives reaches the village ;

(4) securing minimum standards of cultivation to be observed in the village with a view to increasing production ;

(5) bringing waste land under cultivation ;

(6) arranging for the cultivation of land not cultivated or managed by the owners ;

(7) organising voluntary labour for community works ;

(8) making arrangements for co-operative management of land and other resources in the village according to the terms of the prevailing land management legislation ; and

(9) assisting in the implementation of land reform measures in the village.

These and other similar tasks can be carried out with enthusiasm in the measure in which a village community becomes aware of its problems and of the power of its members, through mutual aid and co-operation, to solve them. The first aim of village leaders and of extension workers is, therefore, to stimulate an understanding of what needs to be done and of the means that lie at hand as well as a growing sense of common interest and responsibility for the welfare of every section of the village community.

18. The process of election by which panchayats are constituted may not always throw up a sufficient number of persons with qualities most needed in village reconstruction, such as good farmers engaged in improving agricultural practice, enthusiastic workers of the co-operative movement and persons whose main interest lies in constructive social work. We, therefore, suggest that for village development programmes there should be provision for a small number of additional members to be appointed by the State Government or on its behalf, so that the panchayats enlarged in this manner function as village development agencies largely on the basis of consent and constructive leadership within the village. We expect that this village agency will gradually be able to draw up production plans for the village as a whole on the basis of programmes accepted by individual farmers and local co-operatives, and will thus become the effective base for planning on a national scale in the field of agriculture and rural development. These suggestions have been made in general terms because the organisation which will serve best at the village level is necessarily a matter of local adaptation. Conditions vary in different parts of the country and even the term ' village ' has several different connotations. The points which may be emphasised are (1) the need for an appropriate agency in the village or

as near the village as may be possible, (2) the desirability of having as members of the village body concerned with various aspects of village development a few persons in addition to those who may be elected by vote, and (3) the need to use the village body as an effective agency for development in the village and in relation to programmes sponsored by the government.

19. The resources of village panchayats have been recently reviewed by the Local Finance Inquiry Committee. Legislation in different States provides for various forms of taxation by village panchayats, such as taxation of land and house property, profession tax, vehicle tax, fee on transfer of land and other moveable property, reimbursement of recoveries on account of judicial fines, fees, etc., and licence fees of different kinds. There is provision also for grants and contributions by the District Board and the State Government. In some States, village panchayats are entitled to call for contribution in labour which, according to the legislation, could amount in the course of a year, in the Punjab, for instance, to about 48 man-hours, in Orissa to 4 days' work, in Madhya Pradesh to 15 days' work, and in Assam to 36 days' work. Frequently, there is a provision that those who are unable to contribute labour may make an equivalent contribution in money. These legislative provisions are not yet effective on any significant scale. Whether legislation formally provides for contributions in labour or not, it is of the utmost importance that village panchayats should find ways of utilising the available manpower for works in the village or even outside, for instance, by forming labour co-operatives. Legislative provisions may undoubtedly be helpful, but it is by arousing local enthusiasm for improving village conditions and promoting common effort that village panchayats can secure the largest measure of participation by the people in various programmes of development. The Five Year Plan includes proposals for financial and technical assistance to rural areas designed specially to draw out substantial contributions in labour and money and to stimulate local effort in the villages.

20. In some States the practice of making over a share of the land revenue to the village panchayat has been recently adopted. The Local Finance Inquiry Committee recommends that 15 per cent. of the land revenue should be given to the village panchayat. We recognise the advantage of giving to each village panchayat a nucleus fund around which it can organise further effort in the village and attempt to provide the minimum services needed to raise the level of village life. It is necessary, however, to point out that in the estimates of resources on which State Plans are based, State Governments have, as a rule, taken credit for the full proceeds of land revenue. If a portion of the existing income from this source is diverted to village panchayats, to that extent the State Plans will be affected. The more appropriate course might, therefore, be for the State Governments to impose a suitable surcharge with reference to the land revenue and to make over the proceeds of this surcharge to the village panchayat. In addition to the provision of resources, we suggest that State Governments should take special steps to train members and officials of village panchayats and to use village panchayats as focal points in schemes of social education. The results of experiments in the development of panchayats which have been undertaken in different States need to be studied carefully, so that States can benefit from one another's experience.

Rural Extension and the Integration of Development Activities

21. Within the district, development programmes of different departments have to be coordinated into area programmes at the following levels:

(*i*) for a village or a group of villages which have a common panchayat ,

(*ii*) for a group of villages intermediate between the panchayat area and the development block, such as, the area entrusted to a village level worker or, as in West Bengal, the area served by a union board ;

(*iii*) for a development block which, according to the practice now adopted for community projects and intensive area development schemes, might represent an area of about 100 villages with a population of about 50,000 to 60,000 and should correspond, as far as possible, to a recognised administrative area in the district such as one or two revenue circles, a *taluk* or a *sub-tahsil* ;

(*iv*) a sub-division or an area within the district (which may comprise more than one *tahsil*) for which a revenue officer is placed in specific charge of development and other executive work ;

(*v*) towns and cities which have their own municipal bodies ; and

(*vi*) the district as a whole, the district programme being the sum of programmes drawn up, both on the urban and the rural side, for the different units mentioned above.

In virtue of his position as the head of the district, the Collector is the natural leader in development programmes undertaken or aided on behalf of the government. This has led the recent Grow More Food Enquiry Committee to describe the Collector as the Extension Officer of the district under whom all development activities are unified, with specialist officers working as members of a single team. In the area comprised in a sub-division, the Sub-Divisional Officer (or elsewhere, the senior revenue officer assisting the Collector) plays a similar role.

22 We have referred already to the growth of separate departments for different activities in the field of development. These departments have their own personnel for research and other technical work. They also endeavour to reach rural areas through their field staffs, but these are usually small in number and are not too well equipped in practical knowledge. The villager finds himself approached through a number of channels on behalf of the government and receives advice which may be contradictory or ill-coordinated or even lacking in value for his day-to-day problems. Some States have been quick to recognise that the development effort which the government makes is weak, and frequently fails at the very point at which it touches the life of the people. Although large sums are spent and much useful research done, the impact on the village home and on the farm is not commensurate. Intensive work in projects in Uttar Pradesh, Madras, Bombay and elsewhere has confirmed the view that village-level workers and a common extension machinery on behalf of the principal development departments of government are vital to the success of rural development programmes. These conclusions have been followed in the community projects and other intensive area schemes which have been recently introduced. The Grow More Food Enquiry Committee

has recommended that within a period of ten years a rural extension organisation should be built up throughout the country The Committee has proposed that at the village level there should be one worker for five to ten villages who will be "the joint agent for all development activities and who will convey to the farmer the lessons of research and to the experts, the difficulties of the farmer, and arrange the supplies and services needed by the farmer, including rendering of first aid for animal and plant diseases." We are in agreement with these proposals and recommend their early acceptance by the Central and State Governments, so that the necessary administrative programmes can be drawn up and executed with speed.

23 While the village is the basic unit of community organisation over the greater part of the country, for particular purposes it may be found that a larger unit is needed. For instance, in employing paid staff for panchayats and co-operative societies, in arranging for supplies and credit or for providing amenities a larger area and population will frequently make for greater economy and efficiency. How large the area should be and what arrangements should be made for effecting the necessary co-ordination and economy in the provision of services and amenities must depend upon local conditions and requirements. The need for such arrangements, however, exists everywhere and has to be taken into consideration in planning the execution of rural schemes under the Five Year Plan

24. For the area represented by a development block, a common agency for the agriculture, co-operative, panchayat and animal husbandry departments has to be created In the organisation of community projects and in intensive area schemes as well as in the report of the Grow More Food Enquiry Committee, the view has been taken that for the development block what is required is an extension team rather than an extension officer. In this arrangement, officials representing the agriculture, animal husbandry, co-operative and panchayat departments as well as those concerned with cottage industries, health and education departments are expected to integrate their programmes as closely as possible in terms of the requirements of the local population and to work together as a team The local representative of the revenue department has also to be closely associated with the work of this team. In some States, panchayat staffs have been placed recently under the Registrar of Co-operative Societies. There is considerable advantage in having common staff for co-operative and panchayat work, wherever this practice is considered feasible. This would be in line with the recommendations made earlier regarding the role of the panchayat in village development.

25. Each State has to work out a pattern for its extension organisation which is suited to its own needs and conditions The essential points which need to be kept in view in making the detailed administrative arrangements are .

(1) a multi-purpose village worker who will be the agent of all the development departments and will represent them to the villager for all their activities :

(2) at the level of the development block, development officers working as a team with the extension officer, who may be the Sub-collector or, where the sub-divisional system is not developed, other officer closely associated with the district administration ; and

(3) the position of the Collector as the head of the extension movement in the district, with the district officers of the development departments working with him as a team.

So long as these essential principles are observed, there must be considerable flexibility and freedom in working out extension organisations adapted to local conditions and open to modification in the light of their practical working. The proposals which we have made will place heavy responsibilities on the Collector. It is, therefore, important, as has been already suggested, that he should have adequate assistance to enable him to devote the closest attention to his duties as the head of the development machinery in the district.

26. In the field of development and indeed of government as a whole, at every level, officials have to work in close co-operation with representative non-officials. This is an aspect of such importance that we refer to it later at some length in connection with our proposals for integrating local self-governing institutions like district boards and municipal bodies with the development machinery and programmes of the State Government. We may add a word here about working relations between the various officials who are engaged in development work in the districts. Administrative changes in the field of development will succeed best if different grades of public servants engaged in formulating and executing programmes are guided by a sense of comradeship in a common enterprise undertaken in a spirit of co-operation and understanding towards the people. It is of the utmost importance in development work in the district that all workers, from top to bottom, should have the opportunity of speaking their minds, of making their views and experiences heard when the targets are established, methods determined and priorities set. The feeling that they have shared in the decision which they are called upon to implement is itself a source of energy and initiative and an assurance that the programmes will be implemented. In this connection we may also refer to the need in development work for keeping the door open to men and women of different age-groups to come into the field of public service from other walks of life. This may be secured by throwing open appointments such as those of extension workers to persons who bring the requisite experience and enthusiasm to the task of development.

Role of Local Bodies in Development Programmes

27. With the exception of corporations and a few large municipal bodies, local self-governing institutions have remained subordinate, though distinct, units of administration. Until recently there were few basic changes in their legal and financial structure. Their activities have not been integrated sufficiently with those of State Governments. At one stage, Collectors and other officials who presided over local bodies provided a way of coordinating their schemes with the schemes of the State Government. With the appointment of non-official chairmen, however, the gulf has widened.

28. During the past decade, the problems of local bodies have received even less attention than before and indeed, on the whole, the period has been one of retarded development in the field of local self-government. Generally speaking, during these years, local bodies have not

expanded their resources to any great extent, and have found it difficult even to maintain the existing level of services. Although official chairmen and nominated members have largely disappeared, and the municipal franchise has been widened, in many local bodies the standards of efficiency have gone down and new tax obligations continue to be avoided. In recent years, several State Governments have followed a policy of 'provincialisation' of schools, hospitals or veterinary centres, which were run by local bodies and, had their own financial resources permitted, many of the States would have carried this policy further than they have in fact done. Owing to unsatisfactory employment conditions in local bodies such action is often welcomed by their own employees. With the abolition of posts such as those of Commissioners, supervision over local bodies, which seldom went beyond the routine, has further diminished. In post-war development programmes no place was found for local bodies. In the Five Year Plan some of the more important programmes of local bodies are expected to receive assistance, but in the main the omission will have to be made good in practice by treating the programmes of local bodies as an essential part of district and State programmes.

29. The Constitution has provided for democratic institutions at the Centre and in the States, but so long as local self-governing institutions are not conceived as parts of the same organic constitutional and administrative framework, the structure of democratic government will remain incomplete. The view is sometimes expressed that the creation of decentralized agencies for functions now performed by State Governments may lead to the weakening of the administration and to lowering of the standards of performance. On the other hand, many in the administration realise that official machinery by itself cannot carry out those development programmes which call for a great deal of initiative and participation on the part of the people themselves. Representatives elected to panchayats, local boards and municipal committees are certainly in a position to express local needs and to suggest programmes of work for their respective areas. The problems and needs of economic and social development in any area are, however, wider than the functions and the outlook of civic bodies like the panchayat, the local board and the municipal committee. At the stage of development which local self-governing institutions have reached, programmes for local development may be best conceived of as joint enterprises to be carried out in close co-operation by the agencies of the State Government and the representatives of the people elected to local self-governing institutions. For the execution of these programmes, however, it is not enough to rely only upon those who are chosen by popular vote. It is necessary to supplement their experience and interests by bringing in a few persons representing, for instance, the co-operative movement, the field of constructive social work, technical knowledge and understanding of the relation between local programmes and the national plan of economic and social development.

30. Local self-governing bodies have thus a vital part to play in the field of development. We consider that the general direction of policy should be to encourage them and assist them in assuming responsibility for as large a portion of the administrative and social services within their areas as may be possible. It may also be necessary to work out suitable arrangements for linking local self-governing bodies at different levels with one another, for instance, village panchayats with district or sub-divisional local boards. The experience gained in some States

in the field of local self-government could be of value to other States as well and needs to be studied. While the process that we envisage develops, close co-operation in the field of development between State Governments and local self-governing institutions could be established in directions such as the following :

(1) Programmes undertaken by local bodies, which are at present restricted by the resources available to them, should be carefully integrated with State programmes. Within the district and the State, they should be shown as part of the district and State plans respectively ;

(2) As far as may be practicable, State Governments should use the agency of local bodies for carrying out their social service programmes. That is to say, if the choice lies between a State Government establishing a primary school or a veterinary hospital with its own resources and assisting a local body in initiating such a development, in principle, the latter course should be preferred, steps necessary for ensuring standards of efficiency being taken simultaneously. It is a good general rule for any authority to try and pass the responsibility for a project to the authority immediately below it if, with a measure of help and guidance, the latter can do the job equally or nearly as well ;

(3) Institutions run by local bodies and the services provided by them should be inspected, supervised and guided by the technical and administrative personnel of the State Government on exactly the same lines and with the same rigour as may be adopted for the State Governments' own institutions and services. Since the majority of institutions run by local bodies receive grants or other assistance from the State Government, it is the responsibility of the State Government to ensure their efficient working by enforcing the necessary standards ;

(4) For carrying out development programmes in any area, it is essential to associate a number of non-officials. The nucleus of non-official representation should be provided by persons elected to local bodies. Members nominated by the district or taluka board may provide the nucleus for development committees set up for framing and watching the execution of district and taluka development programmes. In addition, as explained earlier, there will be other non-officials. The arrangements have to be flexible because conditions vary and new needs and situations have constantly to be met. The precise manner in which the co-operation and association of local bodies in development work are to be secured must, therefore, be left to the judgment and discretion of the authorities concerned ; and

(5) Wherever sub-divisional officers exist or are created in the future, the establishment of sub-divisional local boards should be considered.

31. It is of some importance that members of State Legislatures and of Parliament should be closely associated in framing and working out local development programmes. They are in a position, on the one hand, to bring their knowledge of local needs and problems to bear on the formulation and examination of State and national policy and, on the other, to carry into local programmes the larger perspective and the conception of priorities against which policies

have to be worked out both by the Central and State Governments. This object may be achieved by appointing members of State legislatures and of Parliament, irrespective of their pa ty affiliation, to non-official development committees which are set up in their areas.

32. In view of the large and expanding role that has to be envisaged for local bodies in framing and implementing State development programmes, the question of resources becomes extremely important, for, invariably local bodies are poor. The proposals recently made by the Local Finance Enquiry Committee might be examined by each state in relation to its Five Year Plan and the suggestions which we have made above for co-ordinating district programmes of the State Government and the programmes of local bodies, both urban and rural. The use which each local body makes of the sources of revenue assigned to it is, in the case of municipalities, for instance, as important a consideration as the character of those sources. A better understanding of social needs and of their own obligations is no doubt called for on the part of those elected to local bodies. At the same time, there is need for caution on the part of State Governments in accepting proposals for taking over from local bodies control of institutions like hospitals, schools and veterinary centres. Such transfers do not relieve the local bodies of their financial burdens, for, frequently, they are required to continue their normal contributions to the cost of maintaining the institutions. They do, however, impose additional burdens on the State Government's budget and, to that extent, come in the way of expansion in other fields. At the same time, they deprive the local bodies of the opportunity of gaining experience and restrict the field of local community effort.

REGIONAL CO-ORDINATION AND SUPERVISION OF DISTRICT PROGRAMMES

33. During the past few years, while the volume of work and responsibility falling upon the district organisation and the district officer has greatly increased, there has been a fairly general decline in standards of training, supervision and performance. If development programmes are to succeed and are to evoke popular support and co-operation, it is essential that the administrative machinery of the district should be made much more efficient than it is at present. In this chapter, a number of proposals have been made with this object. There are, however, two other aspects which need to be considered. Except in the smaller States, it is often desirable to prepare development programmes in terms of regions determined by physical, economic and administrative considerations. The needs and priorities of different regions as well as their potential for short-term and long-term development should be taken into account in drawing up and continually reviewing their development programmes. There is always a possibility that at the State headquarters, regional aspects may receive less consideration than they deserve. District plans are always essential, but they may gain in value if they are also part of well-considered regional plans. In the first stages of planning, embodied in the present plan, the regional aspect with its emphasis on the development of local resources has not been worked out sufficiently. It is, therefore, hoped that in the process of implementation from year to year, the Plan and the programmes of which it is composed will be continually adapted and adjusted to local and regional needs and conditions.

34. In the second place, with increase in district work and a falling off in the quality of the administration a great deal of inspection, supervision, guidance and attention to training has become an essential condition of efficiency. The need has, therefore, been felt for a senior regional officer who is not himself involved in detailed administrative work and can give personal attention to all aspects of administration and development in his area. Whether such an officer is located in the region, as Commissioners formerly were or, at the headquarters of the State Government, as members of a Board of Revenue are, for instance, is an aspect which has to be considered locally, and no set pattern can be proposed. The important point is that both for securing regional co-ordination and for supervision of district work, in many States an authority between the secretariat departments and the district officer is necessary. We are aware of objections raised in the past to the office of Commissioner. What we have in view is, however, not the revival of the former role of the Commissioner, but adequate arrangements for territorial co-ordination in the field of development and for inspection and supervision over the entire range of work that now falls to the district. The need for such arrangements is emphasised by the fact that many Collectors are relatively new to their responsibilities and if they have a measure of personal guidance at this stage, they will not only secure better results during the next few years, but will also ensure more adequate training for junior officers who will follow them.

35. While problems relating to law and order have frequently to be dealt with directly between the district and the State Government, from time to time there are special problems which need investigation, and special situations in which timely action on the basis of assessment and study by experienced officials may be of enormous advantage to their governments. Pressed as he is with much day-to-day work the district officer is frequently unable to do justice to important questions of policy such as land reform or to complex administrative and economic questions such as arise in connection with food and supply problems. The presence of a senior regional officer can certainly make a difference in the handling of such problems. In this context, we conceive of the regional officer, not so much as one who formulates policy (although doubtless his advice will always be valuable) but as one who explains and interprets the letter and spirit of the government's policies to officials at various levels, watches closely over their implementation, and helps district officials to take whatever steps are necessary for ensuring that the programmes and targets approved by the government are fully achieved.

Social Service Agencies and District Administration

36. In the past social service agencies have played scarcely any part in administration. The subject is one of increasing importance and will be discussed more fully in a later chapter. There is no field of activity concerning district administration in which better results cannot be secured by taking the maximum advantage of the co-operation and civic spirit of individual non-officials and of non-official agencies. In particular, social service agencies can provide workers who will help village panchayats and co-operative societies in discharging their manifold functions. Although their numbers are never large, there are always some individuals who desire to serve the community with no more than a bare living for themselves. At present a good

deal of potential idealism of this kind runs to waste and many social workers are frustrated for want of opportunity to work in a field in which their co-operation would help the people and be valued by the administration. When there are suitable social service organisations willing to train workers and take up programmes, their help could be availed of in specified areas. Suitable financial assistance could be afforded to such organisations to enable them to meet the expenses of training and to pay their workers. There exists already a long tradition of constructive social work of which advantage should be taken in the implementation of development programmes. Such co-operation with social service organisation may prove valuable in developing non-official leadership, especially in the rural areas.

CHAPTER VIII

PUBLIC CO-OPERATION IN NATIONAL DEVELOPMENT

DEMOCRATIC PLANNING

Public co-operation and public opinion constitute the principal force and sanction behind planning. A democracy working for social ends has to base itself on the willing assent of the people and not the coercive power of the State. This leads the application of the principle of co-operation in all phases of social activity and in all the functions which bring together individuals for the pursuit of common purposes. The people have to co-operate among themselves and with the various agencies responsible for the formulation and execution of the plan. In the way any programme is conceived, offered and carried out, action by the agencies of the government must be inspired by an understanding of the role of the people and supported by practical steps to enlist their enthusiastic participation. Where the administration and the people feel and act together the programme gains in vitality and significance.

2. The concept of planning has been associated largely with conditions in which a group has gathered in its hands all the power to control and regiment the life of the community and to command and direct its material and manpower resources. What is there in democracy to take the place of this unified direction and the force which will remove obstructions from the path of economic development along a set line ? Considering the way democracy works on the basis of fragmented authority and of parties with uncertain tenures, attempting to reconcile all kinds of contrary interests and purposes, no plan, it might appear, can proceed very far. Conditions have, however, developed in the world which make planning not only compatible with democracy, but essential for its very survival. A common social outlook which interprets progress in terms of social justice and the economic and social well-being of the people is crystallizing among all who believe in democracy. In fact a major assumption which makes democratic planning real is confidence in the community that the national plan aims at achieving a social order in which economic disparities will be greatly reduced and an equal opportunity afforded to all; that no privilege, no interest is sought to be sustained, even for a period, except in the degree in which it fulfils a larger social purpose. This can furnish the ingredients of social cohesion within the community. We have thus before us here, a much wider view of public co-operation in which the interests of parties are relegated to the background and the common objectives of the nation regarded as a unity are the sole consideration. Certain elements may not agree with the Plan and the aspirations of a section may far exceed the level of achievement set as the target of the Plan for the first few years. But, if the direction of advance is in line with the expectations of the bulk of the people and the rate of progress is not too slow, the essential pre-requisite for winning public co-operation will have been secured.

Reaching the People

3. A widespread understanding of the Plan is an essential stage in its fulfilment. It will help large numbers of persons to appreciate the main lines on which development is expected to proceed over the next few years. They will be able to see how progress in different directions is inter-related and effort in one field strengthens as well as demands effort in other fields. An understanding of the priorities which govern the Plan will enable each person to relate his or her role to the larger purposes of the nation as a whole. The Plan has, therefore, to be carried into every home in the language and symbols of the people and expressed in terms of their common needs and problems. The part which the press can play in co-operation with the planning and executive authorities should be a matter of constant attention. Similarly, with the assistance of creative writers and artists, which has to be specially enlisted, public apathy and ignorance could be overcome and the Plan could be brought nearer to the average citizen. For this purpose it is essential to organise a programme of co-operative action in which the press, writers and artists, universities and educational institutions down to the village school and associations representing professional and other interests may work hand in hand with elected representatives of the people and with public servants throughout the country. All available methods of communication have to be developed and the people approached through the written and the spoken word no less than through radio, film, song and drama. Above all, steps have to be taken to provide literature and information for the people in simple language on a scale equal to the needs of the country.

4. While a general appreciation of national aims and programmes is essential, the average citizen is able to see more vividly and to contribute far more to work that lies near him or touches his life and well being more closely. It is, therefore, of the highest importance that the process of breaking up the National and State Plans into local units based on district, town and village, which has already been begun, should be completed speedily. It is only in terms of local programmes that local leadership and enthusiasm can play their part. The Plan can then become a medium and a focus of constructive activity in every part of the country and can be further strengthened and developed by the effort of the people themselves. Thus, the people become partners in the Plan, and are associated closely with its formulation as well as its implementation from stage to stage. If obstacles are encountered and things go wrong anywhere, it would be helpful in every sense if information is imparted candidly and the people are acquainted with the steps being taken to set things right. It is an error to belittle the capacity of the common man to find out and accept what is good for him.

Role of the Administration

5. As has been stressed earlier, the quality of the administration is of the utmost consequence in relation to the possibilities of enlisting public co-operation. Lack of confidence in the integrity or capacity of the administrative machinery will undermine the foundations for the constructive use of the energy of the people. If at the level at which the citizen meets the administration, he encounters corruption, delay and inefficiency and if he finds no sign of

effective steps against the anti-social elements who exploit the community and benefit themselves at its expense, it will become difficult to evoke enthusiasm and active support from the people. At the same time, organised public opinion, acting through appropriate channels, can itself become a healthy check and deterrent to evil doers in society as well as in administration and strengthen the hands of those who are working for higher standards and reform. It is in the nature of planned national development that the initiative and responsibility for enlisting the association and co-operation of the people should rest with the government and, in particular, with the public services. On account of circumstances which go back to the past, there is yet insufficient realization of the identity of aims between the people and the administration. This fact needs to be plainly recognised as an obstacle to be overcome. By approaching in people as comrades in the same cause, disclaiming privilege and status and eager to learn and to help, those engaged in administration can make an immense contribution towards creating the conditions in which public co-operation can grow.

6. The object of the proposals made in the earlier chapters in this part of the report has been to suggest a series of measures which, if implemented, could raise the quality of the administration to a level at which it would be legitimate to expect the public to be ready to offer co-operation in carrying out the various tasks and to bear the obligations which are inherent in planned economic development. On the part of the administration, efficiency and integrity are of course of the highest importance; equally, the relations between officials at different levels and the general public have considerable bearing on the response of the public. It is an essential rule in the code of a public servant, whatever his rank, to extend to every citizen courtesy and consideration and to inspire in him the confidence that so far as the law and the administration are concerned, all citizens have equal rights and equal claims. It becomes a matter of prestige and honour for the public services, especially for those holding responsible positions, to ensure that this code of conduct is observed to the maximum extent. Every unit in the administration has to discharge its duties in the understanding that the major justification of its existence lies in the service it renders to the community and the confidence which it evokes, and that the public has a contribution to make in the fulfilment of any programme which is no less vital than that of the administration. The approach towards the public must, therefore, always be based on an attitude of close co-operation and a desire to take the utmost advantage of the assistance of the people and provide for voluntary community action over as large a field as may be possible.

Public Participation in Programmes

7. The aims of the Five Year Plan are wider than the targets of achievement proposed in it. It is, therefore, essential that conditions should be created to enable individuals and groups to make their maximum contribution as citizens and in fulfilling the targets of the Plan and advancing its objectives. Co-operation and participation are perhaps most fruitful when each citizen does his part after answering for himself three questions: (1) What promise does the Plan hold for him ? (2) What action does the Plan call for from him ? (3) What means

does the Plan provide to assist him in doing what is asked of him ? Frequently, a national plan can only indicate a direction, a sign post and, whether as groups or as individuals, citizens have to discover their own practical answers and the contribution they are best able to make. This is indeed the essence of democratic action. For the projects which are already in progress, depending upon their aims and importance, arrangements for public co-operation and participation which now exist should be reviewed by each administrative authority in the light of suggestions made later in this report and the people brought closer to each project. For other projects in the Plan, adequate arrangements for enlisting public co-operation and association have to be made from the very beginning. Careful consideration of these arrangements has to be regarded as much a part of a scheme as the estimate of expenditure or the schedule of work or the statement of benefits which are anticipated.

8. In outlining the various programmes of development later in this report, the nature of co-operation from the public which each programme calls for, will be broadly indicated. The Plan cannot achieve substantial results without a great deal of understanding and support from the people. But this will not be enough. Participation of the people in framing and fulfilling programmes and targets constitutes the crux of development in the field of agriculture, and for the promotion of social welfare. From every aspect agricultural development turns upon the extent to which the people take up programmes with enthusiasm and are willing to work for them. The most important means for enlarging public co-operation in the rural sector is village community development achieved through panchayats and co-operatives. Proposals for assisting farmers with finance and supplies, promoting social welfare, and for removing social and economic disparities also depend upon the progress achieved, in building up these institutions, a task which itself calls for large numbers of extension workers as well as non-official social workers. In irrigation projects, on the execution of which the successful fulfilment of the Five Year Plan depends to no small extent, the most promising development would be for villages to form labour co-operatives and undertake the construction of new and other irrigation works in their neighbourhood.

9. The growth of village industries, which is essential for relief of unemployment and under-employment, also hinges on the progress of co-operative organisations. In industry, measures which the management may take to enlist the co-operation of the worker and to create the feeling in him that he has a real stake in the enterprise will eventually go a long way to determine the organisation and structure of industry as a whole. In the field of social services, it is certain that without a great deal of active support from the community, the State can fulfil only a small part of its responsibility ; and if the development of social welfare is left to the resources of the State alone large gaps must remain. Much human suffering has therefore, to be alleviated through voluntary action on the part of the people. Indeed, it may even be said that unless urban and rural communities accept increasing obligations to provide themselves with the essential amenities and services, with perhaps some assistance from the State, progress in social welfare will be slow and inadequate. Thus, whether through positive assistance, or through participation or through co-operation in refraining from doing what may injure the public interest, the field of public co-operation becomes conterminous with that of national development.

MANPOWER RESOURCES

10. In a democracy the State cannot make use of all the real resources of the community directly or through private enterprise acting under the impulse of profit. A large fiel remains for planned effort to canalise on a voluntary basis the unused time and skill and other spare resources of the people and to secure for the community and its weaker sections a volume of economic and social benefit which would otherwise have not accrued. Voluntary service can be marshalled in rural areas for the construction and repair of sources of water supply, roads, school buildings and works for better sanitation and for satisfying a variety of needs which would otherwise remain neglected for years because the State has no financial resources to spare for the purpose. Voluntary activity on these lines, mostly of a sporadic character, is being carried out in different places in the country. The State itself has lent support to such activity in several cases. It is necessary to evaluate and pool the experience gained in recent years, and to work out effective methods for making use of the available voluntary effort.

11. The assistance which the government can give for programmes such as road building, minor irrigation, soil conservation, etc. should be designed primarily to supplement and make possible village development through the use of village labour. The time has long passed when the labour of a few could be commanded under duress for village schemes. Village labour for local development is now synonymous with participation by the entire village community. Various Panchayat Acts give powers to the village panchayat to levy a labour tax or obtain contribution in cash. In many States, the responsibility for repairing minor works is placed under the law on local communities. The law also permits local officials to obtain such labour as they may require for dealing with emergencies in connection with irrigation works, etc. For special situations such as invasion by locusts also local labour has been successfully utilised in some States. There is enough evidence from different parts of the country of the potential value of manpower resources for local development to justify emphasis on the role of voluntary labour in all rural work. The more local communities can undertake through their own effort, the greater will be the extent to which the government will find it possible to aid them. The principal object of community projects is to rebuild village life through work done by the people to meet their common needs. In addition to funds provided for the development of agriculture and irrigation, the Plan provides a further sum of Rs. 15 crores for assisting the rural population in undertaking, mainly with their own labour, works which are required for meeting their urgent needs. Schemes that can be taken up by organised groups of people would fall into three groups :

(*i*) where no official assistance is required,

(*ii*) where only technical guidance or administrative assistance are required, and

(*iii*) where technical aid, equipment and supplies etc. may also be needed.

In this connection, machinery will have to be set up (a) for assisting in getting the felt needs of the population converted into schemes and budgets, in terms of labour, finance, technical aid, equipment and supplies; and (b) for supplying the counterpart aid on behalf of the Government.

AGENCIES OF PUBLIC CO-OPERATION : LOCAL AUTHORITIES

12 We have referred already to the basis on which political parties and groups with divergent emphasis in matters of policy may yet come together for common tasks in national development. There is scope for such co-operation everywhere and legislatures offer a ready meeting ground. To an even greater extent, it is in local self-governing bodies such as district boards and municipal committees, which work through committees, that co-operation in meeting local needs yields rich rewards. It is, however, not enough that those elected to local authorities should co-operate with one another. An education committee or a health committee of a municipal body could have sub-committees for different sectors or wards in a town which can in turn draw upon the help and co-operation of other citizens. There could then be carefully drawn up programmes in each field in which the active support and interest of an increasing number of persons could become part of the programme. In local self-governing bodies as indeed elsewhere, it is by transforming authority into a mutual sharing of obligations and responsibilities that public co-operation can best thrive.

PROFESSIONAL ASSOCIATIONS

13. Associations representing professional groups such as doctors, lawyers, teachers, social workers, technicians and administrators have as great an opportunity as organised interests and possibly even greater to determine their part in national development. These associations contain a significant proportion of the nation's talent and knowledge and their role should be in complete accord with the interests of the community. They have the duty to lay down standards which members of each profession should observe and also, by stages, to improve these standards. It should also be possible for them to organise welfare programmes especially designed to enable their members to give to the community something beyond professional service. The community has much to gain by assisting professional associations to the greatest extent possible in developing their own programmes and supporting those initiated by the government.

UNIVERSITIES

14. The professions are manned by personnel from the universities which have, in turn, a unique contribution to make towards national development. It is being increasingly realised that State policy is adequate in the degree in which it is based upon constructive thought and on ascertained facts. It is precisely in these fields that the universities should be the torch-bearers. The Plan contemplates arrangements for co-operative research between the government and the universities. The sphere of public activity is steadily increasing and, therefore, the influence of thought and study in the universities should greatly increase. For much of its new personnel, the government has to turn to universities. The decline in the standards of education in recent years, which has been marked by many observers, is

as much a matter of concern to the community as it is a challenge to the leaders in different fields of university education. The universities could strengthen their position as agencies for public co-operation by establishing extension departments and by developing field work programmes as part of their training courses.

Voluntary Organisations

15. Voluntary organisations engaged in social work can greatly enlarge the scope of the national plan by developing their own activities, attracting an increasing number of enlightened men and women with a desire for constructive work, and dealing with social problems for which the State cannot provide in sufficient measure. In the performance of various concrete tasks, small groups everywhere can find scope for co-operative activity and the exercise of initiative, and every individual can have something to which to devote his spare time and energy. These acts of disciplined service on the part of individuals and groups will foster the growth of leadership at all levels and will strengthen the community. In particular, voluntary organisations may attempt to develop fields for constructive work for women, youth and teachers and students. These three groups have a vital part to play and their potential for creative activity still remains far from realised. With these possibilities in view, the Plan provides Rs. 4 crores for assistance by the Central Government for voluntary organisations and Rs. 1 crore for youth camps and labour service for students.

16. As voluntary social welfare organisations develop and can assume greater responsibilities, it should be possible to entrust to them an increasing number of functions which have at present to be undertaken by government agencies. In securing public cooperation, the association of non-official representatives in bodies such as development committees, projects advisory committees, etc. in district administration and in community projects, is of a great value. This association should, however, be extended by affording greater opportunity for practical work and practical participation to voluntary organisations. According to the measure of what they are in a position to undertake, with such assistance as the government can provide, extension of the field of voluntary work would not only make economy but would also leave the personnel of government more free to take up tasks which have necessarily to be undertaken by the administration. Such devolution of functions can only take place progressively and on a selective basis, but it is necessary to emphasise that without such devolution occurring, the responsibilities of the administration tend to increase to an extent with which it may be difficult to cope.

National Advisory Committee for Public Cooperation

17. The constitution of the Bharat Sevak Samaj and the National Advisory Committee for Public Cooperation in August 1952, are important preliminary steps recently taken for securing public cooperation on a nationwide basis. The National Advisory Committee, which is representative of different sections of opinion in the country, is expected to :

(1) review and assess the programmes of public co-operation in relation to national development ;

(2) advise the Planning Commission from time to time regarding the progress of public co-operation in relation to the fulfilment of the National Plan ;

(3) receive reports from the Central Board of the Bharat Sevak Samaj and consider such specific matters as may be referred to it for advice by the Central Board ; and

(4) make suggestions and recommendations to the Central Board of the Bharat Sevak Samaj on matters of policy and on programmes relating to public co-operation.

BHARAT SEVAK SAMAJ

18. The Bharat Sevak Samaj has been conceived of as a non-political and non-official national platform for constructive work. The primary objects of the Samaj are—

(1) to find and develop avenues of voluntary service for the citizens of India to—

(*a*) promote national sufficiency and build up the economic strength of the country,

(*b*) to promote the social well-being of the community and to mitigate the privations and hardships of its less favoured sections ; and

(2) to draw out the available unused time, energy and other resources of the people and direct them into various fields of social and economic activity.

The work of the Samaj, which is being undertaken on a nationwide scale, is at present in the initial stages of its organisation. The Bharat Sevak Samaj provides a common platform for all who wish to give their share of time and energy to developing the people's own effort in relation to the National Plan and, at the same time, it is intended to assist in the development of existing voluntary organisations.

PART THREE

PROGRAMMES OF DEVELOPMENT

CHAPTER IX

THE STATE OF THE AGRICULTURAL ECONOMY

The largest portion of the natural resources of India, consists of land and by far the larger proportion of its inhabitants are engaged in the exploitation of land. In any scheme of planned economic development of the country, therefore, agricultural reorganisation and reform hold a position of basic importance. Recently on account of the growing need for food and raw materials this importance has been brought home to all sections of the community. While the several parts of the nation's economy are mutually inter-dependent and they must all receive their proper share of attention from the economic planner, the success of the whole Plan will vitally depend on the results achieved in making the most advantageous use of the land and labour resources engaged in agriculture. In this sense the importance of agriculture is both basic and vital.

LAND UTILISATION AND CROP PATTERN

2. The total geographical area of the country is 811 million acres, but land use statistics are available for only about 615 million acres which are as follows :—

	Million acres	Percentage to total
1. Forests*	93	15
2. Net area sown	266	43
3. Current fallows	58	9
4. Cultivable waste	98	16
5. Not available for culivation . . .	96	16
TOTAL	615†	100

The bulk of the 196 million acres, for which land utilisation statistics are not available, consists of mountains, deserts and inaccessible forests. The cultivated area (items 2+3) comes to 324 million acres. About 35·5 million acres grow more than one crop.

3. Including the conventional estimates which have been framed for non-reporting areas in respect of foodgrains, the gross cropped area is about 317 million acres. Its break up by crops is given in the appendix to this chapter. The appendix shows that food crops cover about 78 per cent. of the cropped area, and commercial crops, which provide raw

*The area under forests, for the Indian Union as a whole, including the non-reporting portion is estimated at 147 million acres.

†Includes 3·5 million acres for which details are not available.

material for industries, account for 17 per cent. Plantation crops and spices cover no more than 1·1 per cent. of the area, though they not only occupy a position of great importance in the economy of the valleys in the north-east and the strip of territory along the south-west coast of India but also play a vital role in India's foreign trade.

Trends in Land Use Pattern

4. Due to changes in coverage and methods of reporting it is difficult to obtain comparable data for the Indian Union as a whole over a sufficiently long period to indicate trends. A study of the data for some of the principal States where only slight changes in coverage have occurred, was, therefore, undertaken over a period of about 40 years (ending 1946-47) which brings out the following trends :—

(*i*) The net area sown* has not increased appreciably except in Uttar Pradesh The area growing more than one crop has increased by about 20 per cent. and the total cropped area, therefore, shows some increase, which, however, lags far behind the rapidly increasing population.

(*ii*) Irrigated area has increased by about 10% mainly through the extension of canals. It has been noticed that the area irrigated from minor irrigation works has remained almost static over this long period. It seems to indicate that the new constructions have at best kept pace with works going out of use for want of repairs or otherwise, *e.g.*, through extension of canal irrigation.

(*iii*) The area under current fallows remained at the level of 1919-20 till the early forties and thereafter showed some increase, particularly in the cotton growing tracts, possibly because of a sudden decrease in cotton area which was left partly fallow. Hyderabad is the only State which shows a continuous increase in fallows. In the opinion of a special committee set up by the Hyderabad Government the apparent increase in the area under fallows is somewhat of an exaggeration.

5. Another study of trends in crop pattern was based on the data relating to the main growing areas of different crops. This indicates the following trends :—

(*i*) The area under food grains shows a small increase during the forties when the area under cotton declined.

(*ii*) During the periods of the two world wars the acreage under cotton decreased. This trend was reversed in the post-war periods.

(*iii*) Area under oil seeds, mostly groundnuts has steadily increased by about 4 million acres.

(*iv*) A considerable increase of about a million acres has occurred in jute area since partition because of the intensive efforts made to fill the large gap created in the supply position after Partition.

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*The apparent increase of about 3 million acres in the case of Bombay is due to reclassification of area from fallows to fodder crops.

(*v*) The area under sugarcane has increased by about a million acres. A steady increase, though small in extent, is noticed in the area under cane in Madras and Bombay.

6. The above trends bring out two main facts of the agricultural situation, namely that (*i*) although gross cropped area has increased as a result of double cropping, little new area has come under cultivation during the last four decades and (*ii*) changes in price structure do affect the pattern of crops even though a large part of the area is cultivated in tiny holdings. A part of the area of cultivable waste can be utilised for extension of cultivation and afforestation. Though much of it may be fragmented, there is a considerable area in sizeable blocks. On the abolition of zamindari most of it has been nationalised. Inspite of the increasing pressure of population, very little extension of cultivation to waste lands has taken place during the last 40 years. This seems to indicate that the available cultivable waste does not generally lend itself to reclamation within the present resources of the cultivators. Small areas may be added here and there, but for any schemes of materially increasing the area under cultivation, reclamation and rehabilitation work has to be undertaken on an organised scale. Only State efforts or State sponsored efforts can hope to do this. For making the best use of all available land a rapid survey to locate cultivable areas and classify them according to the measures necessary for their reclamation appears to be the first essential step.

7. In areas thus selected for agricultural development a major State effort at reclamation will be necessary. A primary necessity is of course to examine the schemes from all relevant technical and economic angles. Time, talent and money spent in this preliminary effort is an indispensable precaution and a profitable investment. Once the scheme is prepared, it may be put into effect through a public corporation or through a development board ; but when colonization or rehabilitation has commenced, the maximum possible scope should be given to co-operative action. While prospects of a significant increase in the area under cultivation are mostly connected with major schemes of development, no measure which is calculated to bring suitable land under profitable cultivation, even within the existing village settlements, should be neglected.

Yield Trends

8. Extension of cultivation can be an important factor in stepping up agricultural production over a period of time. For meeting the immediate needs of the nation, however, reliance has to be placed mainly on increasing production from the existing area by improving the yields. The official estimates framed on a comparable basis indicate that while the area under cereals during the three years ending 1949-50 compared to the period immediately preceding the war has not changed appreciably, there has been a decline in the yield per acre from 619 lbs. to 565 lbs. The yield estimates which are based on normal yield and condition factor suffer from the defect of being subjective and the reported fall may be ascribable in part to caution on the part of State Governments in reporting their surpluses and deficits

from year to year for the purposes of the Basic Plan for food. Since 1944, a scientifically designed procedure for estimating production, based on the technique of random sampling and crop cutting experiments, has been introduced for some crops by the Indian Council of Agricultural Research. The estimates of production based on this technique are now available for 1949-50, 1950-51 and 1951-52, which indicate that while the official estimate for 1949-50 based on the standard yield and condition factor was slightly optimistic compared with the estimate based on the technique of random sampling, the official estimates for 1950-51 and 1951-52 were under-estimates by 6 to 7 per cent. as detailed below :—

	Official Estimates.	Estimates based on random sample survey	Percentage variation
	(000 tons)	(000 tons)	
1949-50	46,018	45,465	+1·2
1950-51	41,786	44,242	—5·5
1951-52	41,264	44,407	—7·1

These figures suggest that while during favourable seasons the official estimates may be somewhat over-estimates, in bad seasons there is a distinct tendency to under-estimate production.

9. A study undertaken by the Ministry of Food and Agriculture to determine yield trends over the last 40 years indicates that in no State do all the crops show a consistent decline in yield. For commercial crops the data revealed clear evidence of generally increasing yields, and in respect of sugarcane an expansion of area as well. In respect of food crops also an expansion in area is perceptible in several cases as also an increase in the proportion of irrigated areas, but yield trends are not uniform ; yields show an increase for certain crops in certain States, a decline in certain others and absence of any perceptible change in the rest. Generally speaking, an expansion of area under a crop has been seen to be a factor associated with the lowering of yield rates, while an increase in the proportion of irrigated area has the opposite effect. In a few cases yield trends are difficult to explain on these grounds and these cases merit further examination. The study concludes that there is little ground for the belief that there has been a deterioration in soil fertility or in the standard of husbandry in recent years.

10. The study referred to above was also based on the official estimates, though for the States selected for the study the estimates of production were comparatively more reliable. The official estimates of average and total yields for individual years, were useful as guides for administrative action, particularly for food crops. It would not, however, be justifiable to place too great a reliance on them for purposes of comparison of yields as between different years as a measure of land fertility. The estimates based on sample surveys are available

only for a few years and they do not cover all crops. On the basis of the data available to us, we would hesitate to arrive at any conclusion regarding yield trends. With a more extensive coverage and with an accumulation of data for several years these surveys will produce significant data on long term trends. In the interest of a planned agricultural policy, therefore, the adoption of the technique of random sample surveys for the preparation of official estimates of production in all States should get a high priority.

AVAILABILITY AND REQUIREMENTS

11. *Cereals*—While the population has increased by about 39 per cent. during the last four decades, the production of foodgrains has not kept pace with it. This indicates an appreciable decrease in *per capita* availability of foodgrains from internal sources. For more than three decades India has been getting a much larger quantity of grains (mainly rice) from Burma than what it was exporting to other countries. The separation of Burma in 1936 has reduced internal supplies by about 1·3 million tons, and the Partition in 1947 by a further 0·77 million tons. Since 1948 we have been importing large quantities of foodgrains, 2·8 million tons in 1948, 3·7 million tons in 1949, 2·1 million tons in 1950, and 4·7 million tons in 1951.

12. Defects in agricultural statistics introduce an element of uncertainty in estimating the overall deficit which has to be met. The existing gap between availability and requirements and that which may come to exist in 1956, if in the meantime, production does not increase may be seen from the following statement* :

1. Estimated population (millions)	1950	353·05
	1956	377·60
2. Estimated adult equivalent population at 86% (millions).	1950	303·62
	1956	324·74
3. Production of cereals in 1949-50 (million tons)		45·13**
4. Quantity available for consumption in 1950 from internal supplies allowing for seed etc. at 12½ % (million tons)		39·49
5. Quantity available for consumption including imports and off-take from carry over stocks (million tons) .		42·40
6. Availability per adult, per day in 1950 (ounces)		13·71

*The figures in the statement exclude Jammu and Kashmir and Sikkim.

**As corrected on the basis of random sample surveys.

7. Requirements for consumption including seeds etc) in 1956 (million tons)—	
(*i*) On the basis of 13·71 ozs. per adult per day	51·82
(*ii*) On the basis of 14 oz. per adult per day	52·01
8. Deficit compared to production at the 1950 level (million tons)—	
(*i*) On the basis of 13·71 oz. per adult per day	·69
(*ii*) On the basis of 14 oz. per adult per day	7·78

To do away with imports and maintain consumption at the level of 1950, *i.e.*, 13·71 ounces per adult per day, the additional quantity of foodgrains needed in 1956 will be 6·7 million tons. The requirements of cereals for a balanced diet have been laid down by the Nutrition Advisory Committee at 14 ozs. and to raise consumption to this level the additional quantity required is estimated at 7·8 million tons. These figures indicate the magnitude of the problem that lies ahead.

13. *Pulses*—The position regarding availability of pulses is no better. The production of gram and other pulses during 1950-51 is estimated at 8·4 million tons. After allowing about 20% for stock feeding and seed etc. the net quantity available for human consumption may be estimated at 6·7 million tons. This means an availability of 2·1 ounces per adult per day as against 3 ounces recommended by the Nutrition Advisory Committee for a balanced diet. At the level of 1951 availability the additional requirements of the increased population during 1955-56 will be 0·5 million tons and to obtain the nutritional standards the additional requirements will be 4 million tons.

14. *Subsidiary Foods*—The principal subsidiary foods in use in India are potatoes, tapioca and sweet potatoes. With their high yields per acre they have a special importance in a country deficit in foodgrains. Potatoes are consumed on a small scale as vegetables rather than as the staple diet because of their high price over a large part of the year. Lowering their cost depends very largely on providing facilities for storage, dehydration and transport more cheaply than at present. Tapioca which is rich in starch forms an important article of diet in parts of Madras, Mysore and Travancore-Cochin. Though, by itself, it has a low nutritive value, it makes a good supplement to both rice and wheat.

15. *Protective Foods*—The present availability of fruits and vegetables is estimated at 1·5 and 1·3 ounces per adult per day respectively. The requirements of a balanced diet are, on the other hand, estimated at 3 ounces of fruits and 10 ounces of vegetables. The availability of milk is estimated at 5·5 ozs. per adult per day as against the nutritional requirements of 10 ounces. Similar figures for fish are 0·2 and 1·3 ounces. Little information is available regarding the availability of meat and eggs ; it is, however, known to be very low. Generally speaking, there is throughout the country too great dependence on foodgrains and insufficient consumption of protective foods.

16. *Sugar*—Production of sugarcane during 1950-51 stood at 5·62 million (*gur*) tons and net availability for human consumption at 1·62 ounces per adult per day as against the requirements of 2 ounces for a balanced diet. To raise consumption to this level during 1955-56, the additional quantity required is 2·2 million tons.

17. *Oils and fats*—Production of the five major oil seeds for 1950-51 has been estimated at 5·1 million tons and the net availability in terms of oils at about 1·69 million tons (including imports of 23 thousand tons of copra and cocoanut oil and allowing for exports of 168 thousand tons). Of this 118 thousand tons were utilised for the manufacture of soaps, paints and varnishes and as lubricants and the net quantity available for human consumption was thus 1·57 million tons of oil. This marks an increase of about 35 per cent. over the pre-war triennium. Even so the availability per adult per day stands at 0·5 ounces only. The other important source of fat in the Indian diet is ghee and the *per capita* availability of ghee works out at no more than 0·1 ounce per day. Including all the sources the *per capita* availability of oils and fats is far below what is considered necessary for nutrition.

18. *Cotton*—Production of cotton during 1950-51 was officially estimated at 2·97 million bales of 392 lbs. net each and consumption at 4·07 million bales. The gap between production and consumption was met largely by importing 0·83 million bales during the year. The requirements for 1956 have been estimated at 5·4 million bales and the gap between production and requirements may thus increase to about 2·4 million bales unless production is stepped up meanwhile. A part of the requirements of long staple cotton, which is not grown in India in sufficient quantities, has, however, to be imported for a long time to come.

19. *Jute*—In spite of the large expansion of the area under jute which has taken place during the last few years, the gap between availability and requirements is still wide. The official estimate of production during 1950-51 was 3·3 million bales of raw jute and 0·6 million bales of mesta—an inferior type of substitute. The requirements for 1955-56 are estimated at 7·2 million bales.. This indicates a gap of about 3·3 million bales between supply and requirements.

Tea, Coffee and Rubber

20. Plantations of tea, coffee and rubber cover less than 0·4 per cent. of the cropped area, concentrated mainly in the valleys of the north-east and along the coast on the south-west of India. They provide employment to more than a million families and thus play a vital role in the economy of these regions. In addition, they earn for India about Rs. 80 crores of foreign exchange. Tea alone accounts for Rs. 78 crores. A remarkable fact about tea plantations is that while the area under tea has remained unchanged for over a decade under international agreements, production has increased by about 43 per cent. over this period. This incidentally brings out that where sufficient capital is invested, yields can be increased appreciably. Coffee and rubber, which used to be export commodities are now largely consumed within the country. India actually imported about 12 million pounds of rubber during 1950-51. Rubber occupies a key position in industrial development and for defence. In view

of the uncertainties of the international situation dependence on imports may be inadvisable. The bulk of the area under rubber is comprised of small holdings which are on the whole comparatively less efficiently managed than the tea and coffee plantations. The production has declined since 1945 because of a fall in the yields of old plantations and increased suspension of tapping due to unremunerative prices. Their rehabilitation demands immediate attention. The Development Committee for rubber plantations has formulated a fifteen-year plan for their rehabilitation and development and from this large increases in yield are expected.

Condiments and Spices

21. In spite of phenomenal increases in prices little change in area under condiments and spices appears to have occurred. The area under black pepper, an important dollar earner which yielded Rs. 20 crores from exports of 15 thousand tons during 1950-51 as against an annual pre-war average of Rs. 3 lakhs, still stands at 1,98,992 acres and has recorded only a nominal increase. Official estimates of the areas under cardamom and lemon grass are not available ; trade estimates place the average areas in the neighbourhood of one lakh acres and twenty-seven thousand acres respectively. Cardamom yields Rs. 1·46 crores of foreign exchange. Cashew nuts, which bring another Rs. 8 to 9 crores of foreign exchange through exports, are largely imported, processed and then exported, the value of the imports being of the order of about Rs. 2·8 crores. The condiments and spices have acquired a position of great importance in the economy of the plains on the south-west coast of India. It is likely that the industry may have shortly to face competition from Indonesia and Malaya. Moreover, the high level of prices may not be maintained. A downward trend is already evident. This industry lacks the organisational advantages which are enjoyed by other plantation industries like tea, coffee, and rubber. Even the exports are generally not graded and this has often led to avoidable losses. The Government of India have recently set up a committee to examine the whole position in respect of these crops, and particularly the question of their production and marketing being brought under a single organisation.

Approach to Agricultural Development

22. In this chapter we have attempted to state briefly the main features of the agricultural situation in India. The facts cited above may seem to suggest that the rural economy has been largely static. Some notable developments have, however, occurred over the past few decades. Large areas which suffered from repeated failures of rainfall have received irrigaton ; new crops have come to occupy a significant position in the country's production and trade ; the agricultural and the industrial economies in the country now exert a powerful influence on one another ; problems of rural indebtedness and the village moneylender exercise the administration and the people much less than they did fifteen or twenty years ago ; and finally, there is already in the countryside an awakening and a desire for raising standards of living. The even tenor of the agricultural economy was seriously disturbed as a result of the Partition ; but much adjustment has already taken place. In describing the state of the agricultural economy it was necessary to give special attention to the facts of agricultural production. An assessment of the state of production is, however, no more than a starting point for the consideration of the conditions which determine agricultural development. This task is attempted in the chapters that follow.

23. The peasant's life constitutes an integrated whole and his problems interact to such an extent that he does not see them in compartments. In the same way, in approaching agricultural development, the peasant's life and problems have to be viewed together, no doubt selecting the points at which special emphasis is needed, but aiming always at a comprehensive and many-sided effort to transform the peasant's outlook and environment. The end in view is the development of the human and material resources of the rural community. This is to be achieved in the main by enabling the rural people to solve their own problems and to organise themselves for co-operative action with a view to adapting new knowledge and new resources to their needs. Thus, while co-operation offers the basis of community action, it falls to the administrative machinery of the government and, in particular, to extension workers, to provide guidance and help to the villager.

24. A rigid social structure and unutilised resources have always characterised underdeveloped economies. To change the social pattern built round the ownership of land and to bring new resources and technology into every day operations become, therefore, central to the process of development. It is the purpose of planning to bring about rapid changes in such a way that the economy moves forward in a balanced, integrated manner, keeping in view at all times the major objectives of community development, increased production and equitable distribution. The succeeding chapters are concerned with various aspects of this central theme. In the discussion on land policy we set out the lines on which changes in the social structure might be brought about speedily to the greatest advantage of the country while, at the same time, strengthening the village community, eliminating differences in status and opportunity, and building the village into an organic unit in the structure of national planning.

25. The Five Year Plan envisages substantial increases in agricultural production for foodgrains as well as for commercial crops. The targets proposed in the Plan are to be realised through development programmes relating to major and minor irrigation works, extension of cultivation, reclamation and intensive farming based upon the application of the results of research. Considerable stress is laid on the conservation of existing resources, in particular, of forests and the soil. Diversification and expansion of the rural economy is sought through emphasis on the development of dairying and horticulture and through the growth of village industries, wherever possible, with the aid of power and improved tools. Land resources are to be supplemented by the resources of sea and river and, therefore, the Plan provides for a new and extensive programme for the development of fisheries. As the rural economy has been largely starved of financial resources, a substantial programme for providing finance for agriculture has, therefore, been proposed.

26. Measures envisaged in the Plan in the fields of industry, communications, and social services have considerable bearing on the growth of the rural economy, for they raise its economic potential, bring new resources into action and, above all, alter the *milieu* in which the peasant lives and works. Thus, although agricultural programmes lie at the very centre of the Five Year Plan, they have to be seen in the perspective of a larger plan that comprehends all aspects of national development.

APPENDIX

Crop Pattern (Indian Union)

Crops	Million acres	Percentage of the total cropped area
GROUP I (FOOD CROPS)		
1. Cereals	193·04	60·88
2. Gram	18·71	5·90
3. Pulses	28·47	8·98
4. Fruits and Vegetables (*a*)	5·00	1·58
5 Other food corps (*a*)	1·65	0·52
TOTAL	246·87	77·86
GROUP II (COMMERCIAL CROPS)		
6. Major oilseeds	26·68	8·41
7. Other oilseeds (*a*)	4·27	1·35
8. Cotton	14·56	4·59
9. Jute	1·45	0·46
10. Other fibres (*a*)	1·05	9·33
11. Sugarcane	4 21	1·33
12. Tobacco	0·90	0·28
TOTAL	53·12	16·75
GROUP III (PLANTATIONS, CONDIMENTS AND SPICES)		
13. Plantation crops (tea, coffee and rubber)	1·19	0·37
14 Conditments and Spices (*a*)	2·46	0·78
TOTAL	3·65	1·15
GROUP IV (QTHER CROPS)		
15. Fodder (*a*)	11·17	3·52
16. Other crops (*a*)	2·27	0·72
TOTAL	13·44	4·24
TOTAL CROPPED AREA	317·08*	100·00

Source : Estimates of area and production for 1950-51 in case of all crops except those marked (*a*). The latter relate to 1949-50 and the source is Land Utilisation Statistics.

*While the estimates for cereals and gram cover reporting as well as non-reporting areas, those for other crops relate to reporting areas only. The total cropped area may, therefore, be somewhat larger.

CHAPTER X

DEVELOPMENT OF THE CO-OPERATIVE MOVEMENT

In India, as in many other countries, co-operation started as a means of ensuring for the poorly equipped citizens advantages which better placed persons were able to command by their own individual resources. The principle of mutual aid, which is the basis of co-operative organisation, and the practice of thrift and self-help which sustain it, generate a sturdy feeling of self-reliance which is of basic importance in a democratic way of life. By pooling their experience and knowledge and by helping one another, members of co-operative societies can not only find the solutions of individual problems but also become better citizens. In an unregulated economy, the terms of contract are frequently weighted in favour of persons of large means. Those who have the command of scarce resources are left free to drive a bargain with those who need such resources but are ill-equipped to compete for their possession. In a relatively stagnant agricultural economy of small holders, undergoing a transition from barter to money economy and from local to national and international exchange, the possession of capital naturally confers a strategic advantage. The evils of usury, indebtedness and widespread indigence which were rampant in the rural areas at the turn of the century were the inevitable outcome of the economic transition that was then taking place.

2. After the experience of the limited success of merely regulatory laws like the several anti-usury measures, an effort at building up by mutual association the people's own credit institutions was sponsored by government. In the then prevailing atmosphere of economic passivity on the part of the State this official sponsoring of a special form of organization was considered to be a great event. The first piece of co-operative legislation was the Co-operative Credit Societies Act of 1904, which was amended in 1912 to permit the formation of societies for purposes other than credit. As a result, societies for a variety of purposes began to be organized. This process of diversification was, however, slow in its pace, until the special needs of the period of the Second World War, and the subsequent years of reconstruction invested co-operative organizations with a special importance and significance. When individualism was the order of the day, co-operation represented a defensive act of association on the part of individual citizens. But with the adoption of the principle of social regulation, the co-operative societies, which from their commencement in this country have been socially sponsored and supported, came to occupy a more positive role. In a regime of planned development, co-operation is an instrument, which while retaining some of the advantages of decentralisation and local initiative will yet serve willingly and readily the overall purposes and directives of the plan. This has been amply proved by the recent experience of India, as also of other countries, like the U.K. which have entered upon an era of democratic planning. The co-operative form of organization can no longer be treated as only a species within the private sector. It is an indispensable instrument of planned economic action in a democracy.

3. The broad features of the history and evolution of co-operation in India are unmistakable. With 181,000 Societies, a membership of about 14 million and a working capital of Rs, 276 crores the movement constitutes an important economic and social force in the country. It has shown a steady quantitative expansion, especially during the last five years. Even more striking than the expansion in numbers and size, is the growing diversity of functions assumed by co-operative societies. Besides agricultural societies of all types—credit, processing, marketing, farming, irrigation, consolidation, etc.,—there are industrial co-operatives, labour societies, consumers' co-operatives in rural as well as in urban areas, housing societies; processing factories; and urban banks. However, agricultural societies still constitute more than 80 per cent of the total and of these credit societies are still by far the most numerous. The non-credit and the non-agricultural forms are, however, making steady progress The conditions created by the Second World War, the emphasis on intensive and rapid rural development in the post-war reconstruction programmes of State Governments, and the channelling of state aid activity through co-operative institutions have been responsible for this trend.

4. An increasing measure of responsibility for organising and financing rural economic development is being shouldered by co-operatives. Both the natural evolution of co-operative activity, and the impetus of the special need created in several parts of the country by agrarian legislation regulating the business of money-lenders, scaling down of debts, restricting rents and abolishing landlordism are responsible for the striking increase in the operations of co-operative credit societies. Co-operation is in fact being transformed steadily yet surely, from a tolerated exception into a general rule. In industry, commerce, transport and retail distribution co-operatives are gaining experience and strength. Different State Governments sometimes emphasize different fields of co-operative activity in keeping with local conditions. There can be no doubt, however, that a new awareness of an opportunity to build up a form of business organisation more suited to the conditions and needs of the times than the joint stock company has come over the people of small means everywhere. The joint stock company is too cumbersome as an organization for the small producer, agricultural or industrial. What is needed and what the co-operative society has provided is a simpler form of organization more suited to the needs of the people to be served and therefore likely to be more acceptable.

5. We have in several parts of this report expressed our preference for the co-operative organisation of the economic activities of the people, especially of those activities *e.g.*, agriculture, marketing, cottage and processing industries and internal trade, which form the most important part of the developmental schemes included in the Plan. As an instrument of democratic planning, combining initiative, mutual benefit and social purpose, co-operation must be an essential feature of the programme for the implementation of the Five Year Plan. As it is the purpose of the Plan to change the economy of the country from an individualistic to a socially regulated and co-operative basis, its success should be judged, among other things, by the extent to which it is implemented through co-operative organisations. The Planning Commission in consultation with the State Governments, co-operative organizations, and the Reserve Bank intends to formulate a more specific programme for the expansion of the movement in all the sectors in respect of which co-operative organisation has been considered suitable.

DEVELOPMENT THROUGH CO-OPERATIVES AND PANCHAYATS

6. We are anxious to ensure that in the agricultural part of our Plan the village as a whole should be actively associated in framing targets, in suggesting suitable methods for achieving them, in evolving and directing a suitable organisation for day to day working and in checking periodically the progress made. A willing and constructive participation of the people can alone ensure the success of the Plan. While a general stirring of the aspirations of the people is to be noticed all over the country, the establishment and successful working of village organisations remain to be achieved in many parts. Latterly there has been a welcome earnestness on the part of State Governments for the establishment of Panchayats as civic and developmental bodies charged with the general responsibility of attending to the collective welfare of the village community. Panchayats have an indispensable role to play in the rural areas. As representing the best interests of all sections of the community their status is unique. Many activities such as, framing programmes of production for the village, obtaining and utilising governmental assistance for the betterment of the village, such as, the construction of roads, tanks, etc., encouraging villagers to improve the standards of cultivation, organising voluntary labour for community works and generally assisting in the implementation of economic and social reform legislation passed by the States, will naturally fall within the purview of the panchayat.

7. On the other hand, for the working of individual programmes of economic development, where not only the general interest but also the specific responsibility and liability of a member have to be ensured, a more integrated and binding form of association is needed. Specific and practical tasks of reclaiming land, of providing resources for better cultivation, of marketing the produce of the villagers, both agriculturists and artisans, can be best performed through co-operatives. The co-operative agencies will naturally have to conform to the principles of business management, namely, of satisfactory service and economical working. That they are not profiteering associations and that they function for mutual service makes them desirable agents of democratic planning. It is therefore very necessary that Co-operative agencies in the village should have the closest possible relationship with the principal democratic body namely, the panchayat. Though in the discharge of their functions the two bodies have specific fields to operate, in a number of common functions by having mutual representation and by having common *ad-hoc* committees, it will be possible to build up a structure of democratic management of developmental plans through both the organisations, the panchayats and the co-operative societies. We therefore suggest that in so far as institutional reform is an essential part of the implementation of the Five Year Plan, emphasis in due proportion and in appropriate fields should be placed both on panchayats and on co-operative societies.

MULTI-PURPOSE AND CREDIT SOCIETIES

8. The States as a whole are conscious of the importance of developing co-operative societies as a means of re-organisation of rural life. Among co-operative bodies working in rural areas, the multi-purpose society has quite rightly come to occupy an important place. It

has come to be realised that division of the needs, activity and assets of a villager into mutually exclusive parts such as credit, production, sale etc., is somewhat artificial. At any rate, it has been agreed that for the future an attempt should be made to have in each village a co-operative organisation which will cater for the multiple needs of its members. In some parts of the country efforts are now being made to transform many of the credit societies, which historically have been the most important co-operative organisations, into multi-purpose societies. The emphasis now being placed on the concentrated and all-sided development of rural areas would suggest the desirability of encouraging such transformation. Pending this development the credit societies will continue to play a vital role in rural economy. In fact it is difficult to over-estimate the importance of the services that rural societies could render in the sphere of credit organisation.

9. Recently there has been a noticeable increase of money incomes in the agricultural sector of the economy. Much of the development that will be brought about under the Five Year Plan will strengthen this tendency. While therefore, on the one hand, larger sums will come to be disbursed in rural areas, it is of the utmost importance to see that monies so spent do not go outside the system of organised credit. In other words, rural savings and monies generally in the hands of the rural population have to be kept flowing into credit organisations. A co-operative society is calculated to do this much better than almost any other organisation. In the Co-operative form of organization the provision of resources such as credit goes with the practice of thrift. Even if a village co-operative is too small to open a savings account for its members it can induce them either to open accounts with the postal savings banks or the Central Co-operative Banks. It can also function as an authorised agent for savings, promoting savings schemes sponsored by the State or Central Governments. The establishment of credit societies in villages is thus a *sine qua non* of the organisation of credit in the context of planned investment in the developmental schemes approved in the Plan.

10. In the past the village credit societies have been accustomed to secure their finance from central financing agencies operating in urban centres and utilising mostly capital resources made available by the urban classes. In keeping with the normal financial structure an apex co-operative bank has also been established almost in all States. The State Governments have lately taken a more active part in assisting financially the apex banks. The Reserve Bank which as the Central Bank of the country is interested in the creation of a co-ordinated and sound system of rural credit has recently liberalised its procedure for accommodation to co-operative banks. We have ourselves recommended in Chapter XVI that the advances to the cultivators through the institutional agencies (*i.e.* the Government and the co-operatives, the latter with the assistance of the Reserve Bank) should be steadily increased so as to reach the limit of at least Rs.100 crores per annum by the end of the Plan year 1955-56. If, however, the credit structure of the country is to be geared to an increasing pace with economic activity in rural areas an intensive effort at integrating all the channels of credit for the common purpose is needed.

SALE AND PURCHASE SOCIETIES

11. The purchase of the agriculturist's requirements and the sale of his produce are key activities in the business of farming and their importance is likely to be even more crucial in a socially regulated economy. Due to his inability to secure a fair deal at these two stages the average agriculturist is denied the full fruits of his industry. The organisation therefore of co-operative sale and purchase societies and of other marketing organisations is vital both for its direct and indirect benefits. With credit and marketing co-operatively organised all over the country not only would the success of the present initial Plan be more adequately assured but the stage will be set for a much more ambitious and constructive programme of rural development.

12. The emphasis of the Plan is on augmenting agricultural production. In this sphere co-operation has a very significant contribution to make. Co-operatives can help to increase the effectiveness of extension work. Other services which a cultivator needs for efficient utilization of his land can also be made available through co-operative agencies. Such aids as seeds, fertilizers, and implements on which depends the profitable exploitation of the resources of the soil can be effectively placed at the disposal even of the small farmer by co-operative societies. In fact, in the field of agriculture co-operation comprises almost every activity that is connoted by the term agricultural organization. It is the best medium for promoting a progressive agriculture. Major items of agricultural development *e.g.* consolidation of holdings, soil conservation and provision of facilities for irrigation as well as current needs such as protection of crops from pests, diseases and animals can be most effectively served through co-operative organizations.

CO-OPERATIVE FARMING

13. In most parts of the country for ensuring economic cultivation an increase in the unit of cultivation is necessary. Here again, co-operative farming has direct relevance. Without under-mining the sense of proprietorship and the incentive to industry that it gives, co-operative farms can produce all the advantages that a larger unit possesses. A community which has been accustomed to the advantages of co-operative association in other vital matters of its business will be more successfully approached for establishing a co-operative farm than is possible in a community in which co-operation has made little headway. While the controversy between voluntary and compulsory formation of co-operative farms may at this stage be avoided, it can be suggested that in any area where a majority of holders representing at least half of the total area under cultivation desire to establish a co-operative farm, legislative means should be at their disposal to proceed with the formation of a co-operative farming society for the whole village. The State on its part should do everything in its power to encourage the establishment of such farms and to promote their satisfactory working afterwards. Farming through a co-operative calls for a number of individual and corporate virtues on the part of members. It will therefore be some time before co-operative farms reach a developed stage. If during the period of the First Five Year Plan, in representative areas of different States a good number of societies are established as going concerns, we can proceed more confidently to expand that pattern of cultivation in the next Five Year Plan.

Co-operation and Community Projects

14. For the intensive and all-sided development of the villages the community projects have recently been launched in the various States. The purpose and the organisation of these projects have been touched on elsewhere in this Report. We have recommended that in all the aspects of community development co-operative methods of organisation should be adopted to the maximum possible extent. As is obvious, the ultimate justification of community projects will depend on the extent to which the people are enabled to make self-reliant efforts to carry out all their activities in an improved, business-like and progressive manner. While the leadership and assistance of departmental and external sources will to some extent help in initiating the process of community development, for the development to be permanent and expanding the people must be active participants in the whole process. It is not easy to conceive how, in the absence of co-operative organisation of their business and of their social activities, this desirable object of community projects can be realised. While the working of these projects is no doubt likely to vary from area to area in keeping with the local environment, a broad co-operative pattern should be considered essential. As in other spheres of co-operative expansion, the programme of reform should take account of the financial and personnel resources that will be made available by departmental as well as institutional agencies. It is, however, essential that in every community project area a programme for all round co-operative development should be drawn up. The establishment of various types of co-operative societies after educating the local public regarding their benefit will be the best means of enlisting the active support of the people on a voluntary basis for works of improvement on an organized scale.

Industrial Co-operatives

15. In the rural areas the needs of employment will not all be met by farming. The Plan contemplates several improvements such as irrigation, soil conservation, and reclamation which may succeed in giving fuller employment to agriculturists than what they have at present. But limitations of nature will in many instances require that the agriculturists should turn to some other occupations during the slack seasons. Besides these part-time workers there are in the villages several classes of artisans who under the pressure of competition from organised industry are finding it difficult to maintain their traditional employments. Chapters bearing on village and small scale industries contain recommendations for the solution of problems connected with these classes of the rural population. We have indicated therein the advantage of establishing industrial cooperatives for such workers. While the formation of agricultural co-operatives is by now a familiar experience, industrial co-operatives are still in their infancy. Their activity is so directly in touch with the moving events of a competitive market that the uncertainties of their business often loom larger than their basic importance. Moreover, co-operative financing and marketing agencies have yet very limited experience of doing business with industrial co-operatives. As a result of these factors, the future of industrial co-operatives is yet not so well-established as appears to be the case with agricultural co-operatives. As we have recommended elsewhere, we desire that cottage

and small scale industries should have for themselves well-marked fields which are not encroached upon by large-scale industry. This principle will no doubt have to be translated into more specific and concrete terms as a result of further investigations and experience. When this is done the conditions for the successful operation of industrial cooperatives will be more assured. In the mean while, it is desirable that co-operatives organised for the several trades be established on a sound footing.

16. While it is possible and indeed desirable that the special advantages recommended by us elsewhere should be made available to the members of these co-operative societies, their place in the industrial structure of a planned economy will ultimately depend on their efficiency. Nothing should be done which will undermine the initiative and self-confidence of the members of these societies. Aids in respect of power, implements, raw materials, technical advice and marketing facilities should all be made co-operatively available to these societies. It is not necessary for us in the present context to suggest how the organisation of the industrial co-operatives themselves should develop from the village to the State level. We expect that according to the experience of each State, some form of federal organisation will in due course evolve. But in respect of the capital needs of these co-operatives it must be emphasised that provision for finance will have to be made commensurate with the extent to which the industrial co-operatives are expected to fulfil given targets of production. Whether the existing co-operative financing agencies can continue to offer finance for in dustrial activities which are somewhat special and, if so, to what extent is a matter in respect of which further enquiry by the States concerned, as also by the Reserve Bank, will have to be undertaken. We note that many of the States are establishing industrial finance corporations, designed for the most part for meeting the financial needs of comparatively small-scale units of industry. The Plan also provides Rs. 15 crores for assisting small-scale and cottage industries. We would recommend that financial aid from this provision and from such corporations should by preference be made available to co-operatively organised industries. With artisans' industry co-operatively developed and with a number of processing factories established on a co-operative basis, a growing portion of rural economic activities will come within the co-operatives sphere. For reasons mentioned earlier in this chapter, such development will conform to the requirements of democratic planning and will make it possible at later stages of planning to formulate more comprehensive schemes of economic progress.

URBAN CO-OPERATIVES

17. While in the immediate future extension of co-operation is most urgently called for in the rural area, where agricultural operations play a dominant part, the urban sector of the co-operative movement has also to develop along systematic lines, if in due course it is to make its contribution to planned development. In urban areas there are a number of artisans of small means who find it difficult to organise themselves in keeping with the requirements of modern times. It is to be desired on social as well as on economic grounds that members of this class should be enabled to reorganise themselves to be able to take full advantage of

modern scientific methods. Small industries cooperatively using advantages like power and special techniques will be able to make a significant contribution to the industrialisation of the country. We have elsewhere expressed our preference for a decentralised type of industrialisation and how far we can go in the direction of decentralisation without loss of economic advantage will depend to a very large extent on the capacity of artisans to organise themselves on a cooperative basis. The utility of co-operation in the urban areas extends to the credit and other needs of small entrepreneurs and cottage workers. Urban banking conducted on co-operative lines has a very important role to play in this field. Co-operative banks are more democratic and more amenable to local control than even small sized joint stock banks, and hence urban banking closely associated with other forms of urban co-operation ought to be more purposefully developed.

18. In urban areas special importance must be attached to consumers' co-operatives. Unfortunately, we notice that as yet, the development of consumers' cooperatives has not made enough progress in the country. Under the influence of rationing and governmental distribution of scarce goods, a number of consumers' societies have no doubt come into being. They have, however, as a class failed to extend their usefulness beyond these limits. Their future, therefore, in the event of removal of controls on distribution of essential articles is somewhat uncertain. The success of consumers' co-operation will primarily depend on the enthusiasm and preference that the co-operators themselves succeed in creating among their fellow citizens. It should, however, be possible for the State to adjust its policies in such a way that the legitimate interests of consumers' co-operative societies are not ignored by those departments of the Central and State Governments which have to attend to their claims. It would in our opinion be in the best interest of the planned development of distributive trades that an attempt be made to build up consumers' co-operatives over as wide a field of distribution as possible. Here again, the questions of finance and credit are likely to be very important. We must, however, remember that to the extent to which co-operatives replace private business, capital engaged in the latter will tend to be released. If a common credit policy is made effective for all credit agencies a transfer of functions will gradually but effectively bring about an appropriate transfer of financial resources.

19. A problem of urban areas in regard to which co-operation has a special significance has been touched upon by us in our chapter on housing. While it is not necessary in this place to cover the same ground again, it must be stated that with the strong urge towards urbanisation that industrialisation is bound to promote, housing assumes crucial importance. While institutional activity such as that undertaken by governmental departments, civic bodies and employers' associations, will meet the situation to a certain extent, a considerable burden of the construction of houses, especially for the middle and lower income groups, will fall on their own co-operative organisations. From the choice of a site to the letting out or use of house-room when it is ready, the work of these housing societies will impinge on a number of departments. It should be the policy of these departments to assist in the formation and progress of these societies.

IMPROVEMENT OF PERSONNEL

20. The success of cooperatives ultimately depends upon their ability to perform their functions—whether they relate to production, finance, marketing, distribution or construction—efficiently and to the satisfaction of the members and the community. The loyalties of the members can be retained not on the basis of monopoly, agreements or under duress but on the strength of the goodwill secured by rendering service. A unit of business, whatever its form cannot survive if it does not fulfil properly the tasks which it undertakes. It also ceases to grow if the management is not watchful for new opportunities. In the agricultural sector for instance diesel engines and electric motors are being increasingly used for providing irrigation in some areas while in others tractors are utilised for cultivation and reclamation. A progressive cooperative, besides supplying seeds, fertilisers and other requisites, would provide spare parts, repair and servicing facilities at reasonable cost. These and similar measures in other fields can be adopted only if the staff consists of competent and trained men. Co-operatives are sometimes organised and administered by those who lack both the qualifications and the experience necessary for the job. This factor alone accounts for a large number of co-operatives' failures and the uneven development of the movement in the country. The importance of efficient management cannot, therefore, be too much stressed. Being a movement essentially dependent on the ability of persons in humble walks of life, who are often amateurs in the handling of business operations, the need for training and education is greater than for those who have ample resources and business experience. The co-operative society is, besides a democratic body, each member of which is equally important. Hence the need, recognized from the earliest days of the movement in foreign countries, for diffusing knowledge of the principles and practice of co-operation among all ranks of co-operators.

21. Many of the managerial and supervisory functions call for specialised knowledge and technical skill. The cooperatives ought to recruit qualified men and get the existing staff adequately trained. The present facilities for the training of higher personnel are not adequate and we have provided a sum of Rs. 10 lakhs for their improvement. We also trust that the State Governments will arrange for the training of other staff, and of workers for the cooperative movement.

22. Even though almost all the States have a cooperative department, many of them have to be helped to equip it to shoulder the new, diversified and complex responsibilities now envisaged. Until recently the main statutory functions of the department were registration, audit and inspection. Consequently the bulk of the staff was well versed in these activities. Now that the cooperatives are being recognised and utilised as an important instrument of economic planning, the staff of co-operative departments, without spoon feeding or interfering too much in the working of the Societies, should be able to provide effective guidance and knowledge and not merely be auditors and inspectors of the Government. In short a constructive attitude and determination to make a success of the cooperatives must pervade the Government departments and the people.

Future Policy

23. In the past there have been occasional complaints to the effect that while the State generally sponsors co-operative societies and desires to accord them a preference, in actual practice agencies other than cooperatives often receive better treatment from a number of departments. There is also a tendency, in some of them, to regard only the cooperative department as responsible for co-operative development. It has already been indicated that the various forms of cooperative activity impinge on a number of departments. Therefore, unless every department and every Ministry accepts and adopts the policy of fostering co-operative methods of business, rapid and enduring results cannot be obtained. For instance the Central and State Public Works and Irrigation Departments spend fairly large amounts on works programmes every year. Except in one or two States most of the works are entrusted to contractors. We consider that every department should follow the policy of building up co-operatives which may eventually replace the contractors or other middle men. It is, however, not our intention that co-operatives should be bolstered up indefinitely, irrespective of the quality or cost of the service they offer. At the same time it is only reasonable to expect that in their formative years they should be ungrudgingly helped by the State to utilise the opportunities offered to them and enabled to consolidate their strength.

CHAPTER XI

FOOD POLICY FOR THE PLAN

Basic Considerations

A well-defined food policy for the period of the Plan is an essential condition for the successful implementation of the Plan. For the large sections of the community which live near the margin of subsistence, a certain minimum supply of foodgrains at reasonable prices constitutes the rock-bottom of the standard of living, a fall in which would be seriously detrimental to health and efficiency. The consequences of any untoward development in the food situation are too obvious to need stressing. The experience of the last few years has brought out clearly the vulnerability of the economy on account of the inadequate production of foodgrains in the country. Foodgrains occupy a pivotal place in the price structure, and if this latter has to be safeguarded, as it must be, the prices of foodgrains must be held stable at levels within the reach of the poorer sections of the community. Even a moderate shortfall in the supply of foodgrains is likely, under Indian conditions, to raise their prices more than proportionately, and a rise in food prices leads directly to a rise in the cost of living and in production costs, all round. This does not, of course, mean that the producer of foodgrains should not get a reasonable return. On economic as well as social grounds, it is vital that he does. But, the real return that he gets does not depend only upon the prices he obtains for his produce ; it depends as much upon the prices he in turn has to pay for what he buys. If an increase in food prices raises these latter, he may be no better off in the end, and may even be worse off. In the last analysis what limits the real income of the primary producer is low productivity. To increase this latter, what is needed is a programme of public investment which will give him the water, the power, the seeds and the manures he needs. A policy which might raise prices all round and jeopardise the investment programme itself is, therefore, of no ultimate benefit to the producer. Food policy for the Plan has, therefore, to keep in mind these wider considerations.

2. The food problem has been the subject of discussion and debate for more than a decade, and several expert committees have reported on the various aspects of the problem. The Bengal Famine Commission reviewed in detail the long-term trends in the economy as well as the several short-term factors which culminated in the food crisis of 1943. The report of that Commission enunciated the principle that " food for all " must be accepted as the basis for Government policy in this field. In a planned economy, this objective inevitably acquires added importance and has to be effectively implemented. The system of controls developed since 1943 through a process of experimentation and of adjustment of the needs and claims of the various States, surplus as well as deficit, has had as its objective the

mobilisation of available food surpluses in the country and their equitable distribution at reasonable prices. The operation of this system has meant a strain on the administration ; it has often involved difficult decisions affecting one sectional interest or another. The degree of public cooperation necessary for ensuring the success of such a system of controls has not always been forthcoming, and doubts have from time to time been expressed whether, on balance, there was advantage in such a system, or whether it might not be better to revert, at least in some degree, to the traditional organisation of the free market and the operation of the impersonal laws of demand and supply. And yet, the lesson of experience is unmistakable : the free market is not a dependable mechanism when the economy is or is likely to be under pressure due either to short supplies in the country or unfavourable developments abroad. It is not without significance in this context that most proposals for decontrol and the restoration of the free market visualise certain safeguards like cheap grain shops, licensing of traders, requisitioning of stocks if necessary, etc. But, these forms of control were tried in the early stages, and it was because they proved unsatisfactory that more stringent controls involving procurement, restriction of movements, price control and rationing had to be adopted.

3. The fact that food controls were a product of war-time scarcities is apt at times to obscure the role they have to play in a planned economy. A plan for development involves large outlays on investment, and this, in the early stages, increases money incomes faster than the available supplies of consumer goods. The pressure of these money incomes, especially if they accrue to the less well-to-do classes, is bound to be felt chiefly on foodgrains, with the result that if the prices of foodgrains are allowed to rise, the real income of these classes is likely to rise much less than their money incomes, thus depriving them of the beneficial results of increased employment and incomes. Nor are these adverse effects confined to the new recipients of income ; they affect all fixed income earners who may be subjected through these price increases to ' forced saving ' out of proportion to their capacity. In a planned economy, food controls have thus certain positive functions, such as safeguarding the minimum consumption standards of the poorer classes, preventing excessive or ostentatious consumption by the well-to-do, and facilitating the country's programme of direct utilisation of unemployed manpower for investment.

THE ' DEFICIT '

4. A major question that arises in this context is as to the precise measure of the ' deficit ' in foodgrains the country must provide for. For this purpose, it is necessary to assess the trends in production and to see how they compare with requirements. We have given careful consideration to this question, but we find that on the basis of available data, it is not possible to reach any definite conclusions on this point. Official figures regarding

acreage and production prior to 1949-50 are not comparable with those for earlier years on account of changes in coverage, mergers of States, etc. The figures of production since 1949-50 indicate, as will be seen from the table below, no significant trend :—

Foodgrains Production, 1949-50 to 1951-52*

(in million tons)

	Rice	Wheat	Millets	All cereals
1949-50	22·8	6·5	16·2	45·5
1950-51	22·1	6·7	15·4	44·2
1951-52	22·8	6·2	15·4	44·4

From an analysis of official figures it appears that there are large variations in the availability of foodgrains between various States, and considerable variations from year to year within the same State. To some extent, these variations might be indicative of the imperfection of the data themselves, but it is clear that an estimate of the ' deficit ' arrived at on the basis of an average norm of requirements for the entire country is apt to prove wide of the mark.

5. Apart from the fact that it is not possible from available data to say how much precisely is the total food production in the country, there is also some doubt whether these data could safely be used for framing a judgment as to whether or at what rate food production in the country has been increasing. There is a view that foodgrains production is, in fact, significantly larger than is indicated by official figures. Certain data bearing on production and consumption of foodgrains have been compiled in connection with the National Sample Survey, and these may be expected to throw further light on the subject. For the time being, the official data, which represent information collected on a countrywide basis and over a continuous period of years, have to be used, though with due caution, for framing policies and for carrying on administration at different levels in the sphere of food and agriculture.

6. From a practical point of view, it is of no great consequence whether food production is or is not higher than is shown by the official data. For, if more is being produced, more is being consumed also. What matters for practical purposes is that over the last six or seven years, the country has imported on an average about 3 million tons of foodgrains. The following table gives these imports since 1946 :—

Imports of Foodgrains, 1946-1952

(in million tons)

1946	2·25
1947	2·33
1948	2·84
1949	3·71
1950	2 13
1951	4·72
1952	3·90

*Official figures as corrected in the light of the results of I.C.A.R. sample surveys.

Imports of foodgrains were lowest at 2·13 million tons in 1950, but this low level of imports necessitated a reduction of 0·85 million tons in the stocks held by Government. Taking into account imports as well as changes in stocks, the net absorption of foodgrains from abroad for the last few years has been as follows :—

	(in million tons)
1947	2·8
1948	2·4
1949	3·2
1950	3·0
1951	4·1
1952*	3·4†

Average net absorption for these years works out at 3 million tons ; the minimum being 2·4 million tons in 1948, and the maximum being 4·1 million tons in 1951. While it is not possible, as stated above, to estimate the ' deficit ' directly in terms of food production and requirements, this net absorption of imports is indicative of the measure of deficiency that has to be made good. In the nature of things, the ' deficit ' is not an invariable factor. If food prices are allowed to rise, the consumption of some sections of the population would come down for want of sufficient purchasing power to buy food at these prices. Through such cuts in consumption, the supplemental imports needed from abroad could be reduced, but this would involve serious hardship, which might even react on productive efficiency.

7. It would be wrong at the same time to take a static view of the ' deficit '. Population in India has been increasing at the rate of about 1¼ per cent. per year, and the additional annual requirements needed on this account are of the order of 4 1/2 lakh tons. This means that over a period of five years an increase of about 2 1/4 million tons in foodgrains production would be absorbed by the increase in population. The problem thus is of providing for an increasing population, if and to the extent possible, at more satisfactory levels of consumption.

8. The ' deficit ' in foodgrains works out roughly at about 6 to 7 per cent. of production as judged from official figures. In view of the possibility of these figures being underestimates, the actual deficit might be lower, say, about 5 per cent. of total production. While, for the reasons mentioned earlier, a marginal addition to available supplies may prove under present conditions of more than proportionate benefit, the aim of policy must be to increase domestic production, to secure an increase in the marketable surplus, to distribute the same as equitably as possible, and to eliminate by the end of the Plan period the need to import foodgrains. It might be well to stress in this connection that the need to import from abroad is related more directly to the marketable surplus available for meeting the requirements of non-food producers than to total production, and that the problem is not merely one of increasing production but also of mobilising more effectively the surpluses which become available with the producers.

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*Approximate.

†As a result of the relaxation of procurement in the latter part of the current year, it is possible that some stocks will be available with private trade for carryover to the next year. But data regarding these are not available.

9. The total cost of imported grains since 1948 works out at over Rs. 750 crores. Although part of the imports received in 1951-52 were financed out of the U. S. wheat loan, it cannot be questioned that the country has been paying heavily for these imports. Any change in food policy likely to reduce procurement and increase the dependence on imports, which, in turn, might mean further expenditure on subsidies, has therefore to be avoided. In fact, the aim should be to reduce imports progressively. The optimum utilisation of the resources available to the country demands that for meeting the requirements of the food administration, the system of internal procurement must not only be maintained but must be steadily improved.

10. For the immediate future, relative scarcity of foodgrains has to be regarded as a datum. The review of the Grow More Food campaign since 1943 undertaken recently by the Grow More Food Enquiry Committee brings out the fact that there has been in recent years an addition to the "production potential" in the country through schemes of minor irrigation and land improvement. It is also true that the efforts made under the campaign have created a new consciousness among agriculturists as to the need and scope for improved agriculture. The reorientation of the campaign suggested by the Committee and the schemes for agricultural development included in the Five Year Plan will undoubtedly show results. It may be hoped that when these results come, they will come cumulatively. The point, however, is that it will be some time before the new trends are established. So far as the outlook for the immediate future is concerned, a particular year might turn out to be on the whole satisfactory, but food policy must, if serious risks in a vital matter like food are to be avoided, be based on the assumption of a continuance of the condition of relative scarcity and strain in spite of a progressive increase in production. This means that for the period of the Plan, rationing and procurement together with certain minimum imports, must be regarded as the key to the maintenance of a stable system of food controls.

Food Prices

11. The following table brings out the trends in wholesale prices and in cost of living since 1947 and shows also the indices for cereals in relation to these—

	Wholesale prices (General index)	Cereals	Wheat	Rice	Food articles	Cost of living (Bombay General)
November, 1947	302	317	375	336	295	273
July, 1948 .	390	478	720	500	392	297
March, 1949 .	370	467	748	486	377	295
September 1949	390	464	557	501	403	291
April, 1950 .	391	458	518	500	399	292
April, 1951 .	458	490	560	555	413	319
December, 1951	433	464	524	539	399	315
March, 1952 .	378	442	510	519	343	298
June, 1952 .	375	445	529	520	350	322
September 1952	389	459	555	543	368	325
October, 1952 .	388	442	556	527	358	...

The rise in wholesale prices as a result of decontrol in 1947 was as high as 30 per cent. After the reimposition of controls in 1948, a measure of stability was attained until the devaluation of the rupee along with several other currencies in September, 1949. The anti-inflationary programme taken in hand soon after devaluation was again a stabilising factor. Prices rose sharply after the outbreak of the Korean War, and although steps were taken to prevent money income from rising as a consequence of the abnormally high prices of exports, the economy was once again subjected to serious inflationary strain The rise in prices in India was less than in the U.K. and the U.S.A. and a considerable part of it was due to speculative factors. The subsequent decline in prices in India was partly a corrective to the earlier speculative trend, and partly a consequence of the real change in world demand-and-supply conditions and of the adoption of disinflationary monetary and fiscal measures by the Government. The inflationary pressures associated with the Korean War have thus been neutralised during the last 12 months or so. But it is evident from the price trends in the last five years that the ground lost in 1947-48 was never regained. The present high level of cost of living is causing serious hardship to the middle classes and it is necessary to safeguard their legitimate interests. The need for a disinflationary price policy, therefore, remains.

12. The decline in wholesale prices since the break of the Korean War boom in April 1951 has been about 15 per cent. The largest fall has occurred in the case of industrial raw materials, which have gone down by 34 per cent. Food articles have registered a fall of 13 per cent, but the fall in the price of wheat and rice has been of the order of only 1 per cent and 5 per cent respectively. The general index of wholesale prices is now at about the same level as on the eve of the Korean War, and the index of food articles is about 10 per cent lower. But it must be noted that it is the prices of food articles other than wheat and rice that have fallen. The index for wheat now stands at 556 as compared to 518 in April 1950 and is close to the peak level of 560 reached in April 1951. The continued high level of the prices of basic cereals accounts largely for the failure of the cost of living to come down.

Recent Changes in Food Control

13. The large imports of grain in the latter part of 1951 and the early part of this year improved substantially Government's stock position in foodgrains. In March and April this year the low price of oilseeds and the difficulties in the disposal of cotton probably compelled farmers to sell more grain in order to meet their cash requirements. To some extent, the bearish psychology created by the sharp fall in almost all prices in the first few months of this year was also responsible for some dehoarding of grains. The satisfactory procurement in the first half of this year, the accumulation of stocks with the Government and the decline in offtake from ration shops led to relaxations of control in several States in June and July. In Madras statutory rationing was withdrawn as from the 15th of June and cheap grain shops were opened instead. Procurement was temporarily discontinued. The State was divided into six zones and inter-district movements within these zones were

permitted. Thereafter, statutory rationing has been suspended in Bihar, U.P., Hyderabad, Mysore, Saurashtra and Madhya Bharat and inter-district bans have been lifted or modified. These changes must be viewed as changes in food administration in response to changes in circumstances. The basic policy of keeping down food prices to a reasonable level and of ensuring that the available supplies of foodgrains are mobilised effectively for meeting the needs of the vulnerable sections of the community must remain unchanged. Only when a substantial and enduring improvement in domestic production and marketable surpluses has materialized can change in basic policy be considered.

14. Between June and October 1952, stocks of foodgrains with the Central and State Governments came down by about 1·1 million tons. The year is, however, expected to close with stocks of about 1·8 million tons, which represents the highest level reached since the imposition of controls. The arrangements in regard to imports, domestic procurement and distribution for 1953 must, in our view, aim at a carry-over of between 1 5 and 2 million tons at the end of the year. A carry-over more or less of this order might be considered necessary for the entire period of the plan.

15. The period since relaxation of controls has been too short to warrant any definitive judgment as to the effects of such relaxation. Short-period movements in prices are inevitably subject to various influences, seasonal and others, which might not be of significance in the long run. These trends have, however, to be carefully watched, and the machinery of basic controls has to continue to operate so as to check any undesirable developments.

16. In regard to millets, certain changes have recently been made in the system of controls with a view to stimulating freer movements within States and larger flows from the surplus States to deficit States. Inter-State movements as well as prices at which the deficit States buy from the surplus States will continue to be controlled by the Central Government. The index of jowar prices in September this year was 204 as compared to 382 towards the end of 1951. It is also significant that throughout the period of controls the prices of millets have risen much less than those of wheat. A measure of relaxation in respect of the internal movement of millets, subject to inter-State bans being maintained and buying by deficit States being kept under Central regulation, may thus be expected to ensure a better distribution of these grains as between States, without producing direct repercussions on major cereals. With buying by deficit States under regulation, prices can be prevented from rising too much, and the retention of inter-State bans ensures that any undesirable developments can be checked in time through appropriate administrative arrangements. The administration of controls is a complex matter, and a measure of experimentation in regard to the detailed arrangements to be made, subject, however, to certain essential safeguards, is desirable if excessive rigidity is to be avoided.

Food Controls in Relation to the Plan

17. If " food for all " is to be the effective basis of policy and if the investment targets in the Plan are to be adhered to, the basic structure of food controls has to be kept intact during the period of the Plan. It is our considered view that until the domestic production

of foodgrains has been stepped up to the extent of 7·5 million tons as envisaged in the Plan, the country cannot be considered to have an adequate and assured food supply. Controls might be relaxed or their form altered after the target of additional production has been achieved and adequate transport facilities have been created to ensure the expeditious movement of food grains from one part of the country to another. The extent to which such relaxation or changes could be made will depend upon the investment targets that the country might then have, and the alternative demands for additional production of raw materials like cotton, jute and oilseeds.

18. It is sometimes argued that controls act as a disincentive to production and that if free market conditions are restored, production will be stimulated, and even though prices rise in the process, the consumers will, in the long run, stand to benefit. To what extent controls are a disincentive depends on two factors, (*a*) the prices paid to producers for controlled commodities, and (*b*) the efficiency and fairness with which the controls are administered. This latter aspect of the problem has, of course, to be constantly kept in view. As regards prices, the problem is to define a level which may be considered reasonable under given circumstances, and to ensure through direct controls or through fiscal and other devices that the producer of foodgrains is not placed at an undue disadvantage. The difficulty about the incentive which might be given by the unregulated operation of the free market to production in a particular line is that expansion in this line takes place at the expense of output in some other line. A general increase in output cannot, obviously, be secured by merely increasing the money reward for each unit of work. The great advantage of a system of controls is that under it the measure of incentive to be given can be regulated.

19. A policy of price stabilisation must have in view certain maxima as well as certain minima. At a time when the economy is subject to inflationary pressures, the emphasis is inevitably on the maintenance of the maxima. But if the trend of prices is persistently downward, a system of controls with defined procurement prices can be used—and indeed should be used—to safeguard the interests of producers by preventing prices from falling unduly. Judicious purchases by Government at defined prices are thus an excellent device for stabilising prices and for evening out to some extent inter-State disparities. Elsewhere in this Report, we have stressed the desirability of initiating State trading in a few essential commodities to begin with. With the bulk of the trade in grains already in the hands of Government, further extension of such trading can play a vital part in stabilising or reducing the cost of living and in diverting to the public sector the surpluses which might accrue in those lines.

20. Food policy has a direct bearing on the investment programme which can be undertaken in an underdeveloped economy. The larger the available supplies of food, the more effectively they are mobilised, the greater is the investment effort the community can put forth, for food constitutes the wherewithal for sustaining the labour force employed in construction and in the production of capital goods and equipment. The rapid

development of an underdeveloped economy is a function mainly of the rate of capital formation, and the latter can be stepped up as more food can be made available to the newly employed. The Five Year Plan, as it now stands, envisages a stepping up of total investment in the economy from about Rs. 450 crores in 1950-51 to about Rs. 675 crores by 1955-56, which amounts to an increase of 50 per cent. in the course of five years. The yearly rates of investment are thus high enough to call for special effort. The resources available to the public sector for financing its plan of Rs. 2069 crores are estimated, as has been shown in Part I, to necessitate a considerable measure of deficit financing. If economic activity in the country is stimulated, as is proposed under the Plan, incomes in the country-side must increase. This is bound to ensure a high level of demand for food. In fact, it may even be stated that a development plan which does not raise the demand for food in the country significantly must be considered inadequate. Persistently low or falling food prices under present conditions of domestic production and availability can only indicate insufficient investment effort and low purchasing power in the community.

21. Throughout this Report, we have emphasised the need for utilising unemployed manpower more effectively. It is only through such utilisation of idle manpower and the spare hours of those partially employed that a comprehensive programme of development can be implemented. The low levels of employment which have become endemic in the economy are not merely so much economic waste ; they constitute a big social problem involving the very stability of the economic and social system. The rate at which the unemployed can be absorbed in productive work depends, obviously, on Government's capacity to supply them food at reasonable prices. It is true that even the unemployed do in any case consume food, but this only means that the increase in food requirements need not be proportionate to the increase in employment. On the other hand, it has to be borne in mind that when the unemployed are put to work, firstly, their food requirements are likely to go up and, secondly, the necessary supplies will have to be found not directly from the families which were hitherto supporting the unemployed but from the marketable surplus available in the system.

22. There are parts of the country which are subject to periodical droughts and scarcity. Some areas are so underdeveloped and yet so thickly populated that special efforts are necessary to create new avenues of employment for the people in these areas in order to provide them with the minimum purchasing power necessary for sustenance. It is in this context as much as in the larger context of development that deficit financing on a big scale is often advocated. What limits the measure of deficit financing that can be undertaken under such conditions is not finance as such but the danger of larger money incomes generating inflationary pressures which might affect adversely the economy as a whole. Only to the extent that these latter are controlled and the supply and distribution of foodgrains and other essential commodities at reasonable prices arranged can deficit financing for fuller employment be safely proceeded with.

Rationing and Procurement

23. The system of food controls to be maintained has to be related to the needs of the urban and other highly deficit areas. This means that cities and towns above a certain size—which might vary according to local conditions in each State—must be statutorily rationed and the needs of highly deficit areas like Travancore-Cochin must be similarly looked after. A system of controlled distribution through non-statutory rationing should normally be adequate for other areas.

24. The system of procurement to be adopted must aim at channelling into the hands of the official agency the surpluses available in each State after the needs of the local population are provided for. Whether monopoly procurement or some form of levy would best answer the purpose has to be determined in the light of the conditions prevailing in each State. The aggregate requirements of the Central and State Governments for meeting their commitments have, since the restoration of controls towards the end of 1948, been between 7 and 8 million tons. These have been met through domestic procurement amounting to between 3·8 and 4·6 million tons and imports varying between 4·7 and 2·1 million tons. Of the total procured domestically, Madras and Bombay which are net importing States have been responsible for about 40 per cent. It will be noticed that the net exports from surplus States have been small relatively to total procurement, the maximum attained being 785,000 tons in 1950. In 1951, net exports from these States fell to 170,000 tons, and for 1952, they amounted 350,000 tons up to the end of October. If food controls are to function with increased efficiency, it is necessary to evolve a system which will increase the flow of grains from surplus States. For deficit States, the problem is to secure from local production what they need for meeting their commitments without, on the one hand, reducing unduly the availability of grain in the rural areas, and, on the other, increasing the demands from the central pool.

Administration of Food Controls

25. The maintenance of a satisfactory system of food controls depends upon (*a*) clarity and continuity in policy, (*b*) efficiency in administration and (*c*) the degree of public cooperation that can be secured. The last is, to a great extent, dependent on the first two. As regards policy, the question has to be approached not so much from the point of view of the needs of particular States as from the overall national point of view. In a country of the size and diversities of India, there is room for differences in the details of administrative arrangements. It is necessary in these matters to adopt a pragmatic rather than a doctrinaire view and to leave room for local adaptations in the light of prevailing circumstances. Nevertheless, the broad objectives must be kept clearly in mind. The aim of policy must be to secure from each surplus State the maximum it can make available to the common pool and to organise the procurement and distribution of grains in each deficit State so as to restrict its drawings from the central pool to the minimum necessary. It is evident that the responsibility for fixing procurement and issue prices and for coordinating the control policies of States must rest with the Centre.

26. The maintenance of a system of controls presupposes efficient administrative arrangements. Given the essential framework of policy and the determination to pursue certain objectives steadily, the necessary efficiency in administration can be secured. Planning implies the readiness to undertake new and onerous responsibilities, and to argue for decontrol on the ground of administrative difficulties is to question the feasibility of planning. A solution to such shortcomings and difficulties has to be found through progressive improvement of the administrative machinery. To a great extent, this is a question of selecting the appropriate personnel.

Change in Food Habits

27. Finally, we should like briefly to touch upon an important aspect of the food problem which relates to consumption habits. Of all the foodgrains which form the staple diet of the country, rice presents special difficulties. Not only India but the world as a whole is short of rice, and the world price of rice is high and is rising further. Even a moderate import of 500,000 tons of rice is estimated to involve an expenditure of about Rs. 40 crores. The outlook for wheat is, on the other hand, better. Considering these circumstances, the substitution of wheat for rice to a moderate extent in the customary diet is highly desirable. The shortfall in the country's rice production is not more than 2 or 3 per cent of total needs, and it should by no means be difficult to make good this deficiency by substituting wheat for rice. There is also scope for encouraging the use of supplementary foods. No doubt, food habits are not easy to change, but if the public is made aware of the cost involved as also of the undoubted benefits of a more varied diet, the necessary response could be secured.

CHAPTER XII

LAND POLICY

THE LAND PROBLEM

The future of land ownership and cultivation constitutes perhaps the most fundamental issue in national development. To a large extent the pattern of economic and social organisation will depend upon the manner in which the land problem is resolved. Sooner or later, the principles and objectives of policy for land cannot but influence policy in other sectors as well.

2. In the three preceding chapters, we have set out at some length the state of the agricultural economy, the approach to agricultural development in relation to the process of national development as a whole, and, finally, the practical implications of the food probelm. In this chapter and the next we consider what may be described as the social policy for bringing about those changes in the pattern of production and distribution and in the structure of the rural economy which will serve to establish increasing equality of status and opportunity and, at the same time, help fulfil the targets of agricultural production which are central to the success of the Five Year Plan. In other words, from the aspect of the national economy as a whole, the conclusions to be emphasised are:—

(1) increase of agricultural production represents the highest priority in planning over the next few years; and

(2) the agricultural economy has to be diversified and brought to a much higher level of efficiency.

From the social aspect, which is not less important than the economic, a policy for land may be considered adequate in the measure in which, now and in the coming years, it reduces disparities in wealth and income, eliminates exploitation, provides security for tenant and worker and, finally promises equality of status and opportunity to different sections of the rural population.

3. The achievement of these economic and social aims is as much a part of the purpose of the Five Year Plan as the fulfilment of targets in industry or transport or agriculture. While broad principles and directions of policy can be indicated, it is necessary to remember that the form and manner of their application and the adaptations to which they are subject will differ widely in different parts of the country. In the main, land policy has to be worked out in terms of local needs and conditions. The texture of relationships concerning land, conditions of economic life, the social composition of rural communities and the pattern of occupational distribution differ widely, so that no generalisation can have more than a limited

value. Nevertheless, developments in one State are often significant enough to exert influence elsewhere. On account of the abolition of feudal tenures, which is in progress in many States, the system of land holding over the greater part of the country is beginning to approximate in substance to the *ryotwari* system. Proposals for land reform raise important questions of policy and finance which call for close co-operation and consultation between the Central and State Governments. Even though the pace of land reform and of economic development cannot be the same all over the country, it is desirable that as between different States there should be a broad, common approach in land reform programmes and, as an essential aspect of the implementation of the Five Year Plan, the stages in which land reforms are to be carried out should be worked out by the Central Government and the States.

4. Problems of land reform may be viewed in two ways, namely, (i) from the point of view of agricultural production and (ii) from the point of view of different interests in the land. The first aspect is the subject of land management legislation, the second of land reform legislation. To fulfil its braoder objectives, land policy should include both elements, for, it is only in an economy in which production and employment expand that the community can realise fully the benefits of changes in the social and economic structure. Although, between the two aspects of policy, there is no conflict of principle, land reform will be fruitful in the measure, in which each step is marked by a balance of emphasis. The main outlines of policy have to be conceived in terms of different interests in land and, at the same time, the effects on production of each measure that may be proposed have to be foreseen and provided for. The interests in question are: (1) intermediaries, (2) large owners, (3) small and middle owners, (4) tenants-at-will and (5) landless workers. These different interests cannot be considered in isolation from one another, for, any action affecting one interest must either give something to or take something away from one or more of the other interests. As social and economic adjustments affecting individual interests come into effect, a new social structure takes the place of the old. It is best that the period of transition and uncertainty should be short, so that the new social pattern can develop its own organic unity and can begin to evolve from within.

INTERMEDIARY RIGHTS

5. The abolition of intermediary rights has been the major achievement in the field of land reform during the past few years. In varying degrees these rights had a long history behind them and, until quite recently, in some States, they were the essential elements of power in the feudal structure. As a result of the elimination of these rights, in States which had *zamindari*, *jagirdari* or other similar tenures, the State has now come into direct contact with the occupier of the land. *Zamindari* has been abolished in Uttar Pradesh, Madhya Pradesh and Madras and is in the process of abolition in Bihar. Legislation already enacted in Assam and Orissa is shortly expected to be enforced, and West Bengal, which has had serious problems to reckon with since Partition, is engaged in framing legislation for the abolition of *zamindari*. Legislation for the abolition of *jagirdari* has been enacted in Rajasthan, Madhya Bharat, Hyderabad and Saurashtra and also in some of the smaller States in Central

India. It has not yet come into effect, however, except in Hyderabad and Saurashtra. In States such as Bombay, Punjab and PEPSU, elements of superior rights which existed have been eliminated or are in the process of being eliminated. The amendment of Article 31 of the Constitution in 1951 cleared the way for the completion of these reforms.

6. Although the abolition of intermediary rights can be described as the completion of one important phase of land reform, two principal problems have not yet been fully solved. These relate to (1) payment of compensation to *zamindars* and *jagirdars*, and (2) establishment of the necessary revenue administration. In a number of States compensation is expected to take the form of non-negotiable bonds carrying a rate of interest and repayable within a period which may extend to 40 years. The question arises whether the compensation to be paid could serve to some extent as a source of investment in public enterprises. One suggestion which has been made is that the bonds issued to *zamindars*, while they remain non-negotiable for periods to be indicated, might be made convertible into shares in projects undertaken by the State Governments concerned or even by the Central Government. The arrangement may have certain advantages both from the side of Government and from the side of the person who converts his compensatory bonds into shares in public enterprises. The suggestion, however, needs to be further examined with reference to conditions in the principal States in which *Zamindari* has been or is expected to be abolished.

7. The question of revenue records and revenue administration in *Zamindari* and *jagirdari* areas is of paramount importance. From information which has been collected from a number of States, it is apparent that the subject needs urgent attention. In the temporarily settled areas, there has long been a framework of revenue administration which, if strengthened, will be capable of assuming new responsibilities consequent upon the abolition of *zamindari*. In most of the permanently settled areas and in the *jagirdari* areas, however, there is scarcely any revenue administration on behalf of the Government and the effective implementation of land reforms becomes a matter of some doubt. The responsibilities which a Government assumes with the abolition of *zamindari* are not confined to the collection of rent, for, important obligations relating to waste lands, forests, fisheries and other miscellaneous rights have to be accepted. We have referred to this aspect already in the chapter on the administration of district development programmes and suggest that the States concerned should give high priority to the solution of administrative problems which arise from the abolition of *zamindari* and, in particular, to the building up of sound revenue administrations.

8. A revenue administration depends, in the last resort, upon a good system of village records. In States like West Bengal, Bihar, Orissa, Rajasthan and Ajmer, there are scarcely any village records. In Hyderabad and certain other areas, over large tracts, there existed a system of village records maintained by *zamindars* and *jagirdars* through their own petty employees. These records were seldom of adequate quality and could not be fully relied upon. Records of rights and other land records become even more important at a time when rapid changes affecting land have become a normal feature of legislative activity. It would not in fact be too much to say that in some States because of defective revenue records the implementation of reforms already enacted will remain incomplete and may even raise new problems which will come in the way of good administration.

SUBSTANTIAL OWNERS OF LAND

9. The growth of population and repeated sub-division have led to a system of distribution in land in which large estates are an exception and the vast majority of holdings are relatively small in size. Legislation for the abolition of *zamindari* and for the protection of tenants has already reduced to some extent the degree of disparity which existed in the distribution of land.

10. Information concerning the distribution and size of holdings is available only to a meagre extent. As a result of an enquiry addressed to State Governments, a certain amount of information which was readily available has been obtained and is given in the annexure to this chapter. Even in States which have an adequate system of land records, the data have to be corrected for the changes which have taken place during recent years on account of the abolition of intermediary rights or the merger of new territories. The data are also defective in that they do not distinguish between cultivated and uncultivated land and, in respect of land under cultivation, between irrigated and unirrigated land. Secondly, they do not indicate the effects of the tenancy legislation of the past few years. Under this legislation large numbers of tenants have acquired either rights of occupancy or of protected tenants and, at the very least, have obtained greater security of tenure. In considering the distribution of land as it exists at present for purposes of policy, it is important to know how much land is under the direct management of owners as distinguished from that held on lease by tenants. Before making other proposals on the subject, the first recommendation which we have to make is that during 1953 all States in India should cooperate in undertaking a census of land holding and cultivation. The lines on which this census should be held and the details of the information which should be secured should be worked out by an expert group and the operations should be so planned that they do not place excessive burden on revenue administrations in the States. In this connection, it may be observed that areas in which village records and the revenue administration are not adequate will present special problems. Unless the preliminary step that we have recommended is taken, we believe that it will be difficult to give practical effect to a number of other steps which remain to be taken in the field of land reform.

11. If allowance is made for factors such as quality of land, area under tenants and the elimination of *zamindari* and *jagirdari* rights, the general picture is one of numerous small holdings, a large proportion of them being uneconomic, a small number of middle peasants and a sprinkling of substantial owners. For reasons mentioned above, it is not possible at this stage to indicate the approximate numbers in each group. It is safe to suggest, however, that substantial owners who are directly engaged in managing their land without the intervention of tenants constitute a very small number.

12. If it were the sole object of policy to reduce the holdings of the larger owners with a view to providing for the landless or for increasing the farms of those who now have uneconomic fragments, the facts at present available suggest that these aims are not likely to be achieved in any substantial measure. The question whether some limit should not be placed on the amount of land that an individual may hold has, therefore, to be answered in terms of

general principles rather than in relation to the possible use that could be made of land in excess of any limit that may be set. We have considered carefully the implications of the various courses of action which are possible. It appears to us that, in relation to land (as also in other sectors of the economy) individual property in excess of any norm that may be proposed has to be justified in terms of public interest, and not merely on grounds of individual rights or claims. We are, therefore, in favour of the principle that there should be an upper limit to the amount of land that an individual may hold.

13. The idea of an upper limit for land has already been given effect to in two different ways, namely, (1) as a limit for future acquisition and (2) as a limit for resumption for personal cultivation. Uttar Pradesh has, for instance, prescribed 30 acres as the limit for future acquisition. Similarly, where land is held by tenants, a land-owner may be permitted to resume up to a prescribed limit for personal cultivation. In Bombay this limit is set at 50 acres, in the Punjab at 50 "standard" acres, in Hyderabad at five times an economic holding, and in Uttar Pradesh, where the tenancy problem and the course of legislation differ from those of *ryotwari* areas, the limit for resumption is a holding of 8 acres. Although a number of States have not yet imposed limits for future acquisition and for resumption for personal cultivation, we consider that the determination of these limits is an essential step in land reform. Certain areas may, however, present special problems. It may happen, for instance, that in some States there may be a great deal of land requiring reclamation. Reclamation programmes may necessitate long period leases of comparatively fair-sized blocks of land where schemes for State farming or cooperative colonisation may be highly uneconomical or prohibitive in cost. Whether the expression 'future acquisition' should also include within its meaning the 'right to inherit' needs to be considered from the point of view of legislation for the imposition of estate duties which is now before Parliament. On this subject, therefore, at present we do not make any recommendation.

14. The question how the limit for resumption for personal cultivation or for future acquisition should be determined needs to be considered. In theory, there are five possible criteria with reference to which the limit may be fixed. Thus, the limit may be a varying multiple of (*i*) land revenue, (*ii*) value of the gross produce of land, (*iii*) value of net produce (or income) of land, (*iv*) sale value of land, and (*v*) lease value of land. Each of these criteria may prove useful in particular circumstances, but their limitations should be appreciated. Apart from the fact that in several parts of the country no land revenue assessment exists, different districts have been assessed at different times and on the basis of varying assumptions as to prices, yields and crop maturities. Comparisons of land revenue rates are, therefore, more valid as between different classes of land within a district than as between different districts assessed at different times and in varying circumstances. Statements about the value of gross produce of land are generally made on rough calculations and are sometimes misleading. The only satisfactory way of calculating the value of gross produce would be to prepare fresh estimates on the basis of a standard series of prices for commodities which go into the produce estimates prepared for different areas during settlement operations. This would be a laborious procedure which could hardly be commended and, frequently, the relevant basic information would not be available. The value of net

produce for an acre of land is calculated after making allowance for expenses of cultivation which may have to be borne by an owner of land as distinct from the tenant. In view of the rapid changes in tenancy conditions which have been and are taking place, it is not possible to use this criterion. On account of tenancy reforms and other factors, the average sale value of different classes of land is also a less useful criterion now than it was in the past. Moreover, a decade of high prices has somewhat distorted the picture. Similar considerations apply to the test of lease value which is further vitiated by the fact that little accurate statistical information covering a sufficient number of instances is available and also because much of the land is leased on the basis of a share in the crop.

15. In the last analysis any particular method of determining a limit implies an average level of income or, in real terms, an average quantity of agricultural produce which it is proposed should become some kind of maximum for an individual agricultural family. It is sometimes suggested that the fair course would be to determine the maximum holding of land in terms of an average anuual income. This would give an accurate measure of the change in the rural social structure which was sought to be brought about and would also ensure that widely different standards for reducing disparities in income were not adopted for the agricultural and non-agricultural sectors in the economic life of the country. There is force in these considerations. It has to be recognised however, that calculations of the amount of land of given quality in any area which may be expected on an average to yield a specified income are subject to so much guess-work that without much more statistical information than is at present available, there are real difficulties in applying the criterion of average income. In actual land reform operations, as the work of resettlement of displaced persons on evacuee agricultural lands shows, there must be considerable flexibility in approach and, considerations of theory apart, it becomes necessary to adopt those criteria which will serve best against the background of the tenures and revenue arrangements peculiar to a State. Within a State, of course, for its different regions, the same criteria have to be followed. As one method of determining a limit, which may often prove applicable in practical work and is here used by way of illustration, it may be useful to apply a rough and ready criterion such as, for instance, a multiple in terms of what may be regarded as a "family holding" in any given area. A family holding may be defined briefly as being equivalent, according to the local conditions and under the existing conditions of technique, either to a plough unit or to a work unit for a family of average size working with such assistance as is customary in agricultural operations. Another possible method of indicating a limit may be to propose an average level of money income which the permissible holding may be expected to yield. The limit which may be appropriate has to be determined by each State in the light of its own circumstances but, broadly speaking, following the recommendations of the Congress Agrarian Reforms Committee, about three times the family holding would appear to be a fair limit for an individual holding.

16. Whether the principle of imposing a limit on holdings should receive retrospective effect and be applied to existing holdings raises wider issues than the limits proposed for futu-e acquisition and for resumption for personal cultivation. The central question involved is whether, in the event of a limit being imposed, lands in excess of the limit can be acquired

for consideration which falls short of fair compensation, that is, their market value at the time of acquisition. Merits of the proposal apart, we are advised that such a course would not be consistent with the provisions of the Constitution. We would suggest that the problem needs to be considered in terms somewhat different from those in which proposals are commonly made.

17. The problem of land held by substantial owners falls into two distinct parts, namely, (*i*) land now under the cultivation of tenants-at-will, and (*ii*) land under the direct management of owners. Keeping in view the limit for resumption of personal cultivation, we suggest that for areas in excess of this limit the general policy should be to enable the tenants to become owners. To achieve this object, the following measures have to be taken simultaneously. First, tenants have to be given security of tenure which could well extend to the conferment of occupancy rights. Secondly, it would be necessary to determine the principles on which (*a*) the price of land should be fixed and (*b*) payment should be made by the tenant. Depending again upon the local conditions, the most convenient course might be to fix the price of land as a multiple of its rental value, and payment might be made in instalments spread over a period. We suggest that there is advantage in the Government establishing direct contact with tenants upon whom these rights are conferred and collecting land revenue from them rather than through owners, the price of land being recovered along with the land revenue. Payment of compensation to owners of land can be made in bonds much in the manner already adopted or proposed for intermediary rights.

18. Where land is managed directly by substantial owners and there are no tenants in occupation, public interest requires the acceptance of two broad principles :

(*i*) There should be an absolute limit to the amount of land which any individual may hold. This limit should be fixed by each State, having regard to its own agrarian history and its present problems. The census of land holding and cultivation, which it is proposed to hold during 1953, will give the data relevant to this decision.

(*ii*) The cultivation and management of land held by an individual owner should conform to standards of efficiency to be determined by law.

It is suggested that each State should enact suitable land management legislation. Under this legislation standards of cultivation and management should be laid down. Specific obligations should be prescribed, for instance, in respect of sale of surplus produce to the Government, production and sale of improved seed, wages and conditions of living and employment for agricultural workers, investment in farm improvements, etc. The legislation should also provide for suitable machinery for enforcing the various obligations. The legislation could be applied, in the first instance, to these holdings which exceed a limit to be prescribed, which may be equal to or larger than the limit for resumption for personal cultivation, and future acquisition, depending upon the conditions in a State.

19. As a practical approach to the problem of large individual holdings, it would be best to divide substantial farms which are directly managed by their owners into two groups, namely, those which are so efficiently managed that their break-up would lead to a fall in production, and those which do not meet this test. For the latter category, the land management legislation should give to the appropriate authority the right to take over for the purpose of management the entire farm or such portion of it as might be in excess of the limit for resumption of personal cultivation and, secondly, the right to arrange for cultivation of lands so taken over. For the cultivation of such lands, preference could be given to co-operative groups and to workers on the lands which pass into the control of the land management authority. The proposals made above would provide for a large measure of redistribution of land belonging to substantial owners. In the legislation a date might be indicated with effect from which the law would be enforced in respect of farms in excess of the prescribed limit. Generally speaking, in order to set up the machinery for land management and to undertake the necessary survey before the law can be enforced effectively, a period of about two to three years might be necessary.

SMALL AND MIDDLE OWNERS

20. The expressions 'small' and 'middle' owners cannot be defined precisely but, for most purposes, it might be sufficient to consider owners of land not exceeding a family holding as small owners and those holding land in excess of one family holding but less than the limit for resumption of personal cultivation (which may be three times the family holding) as middle owners. In the case of small and middle owners, the social considerations which apply are of a different order from those relevant to the circumstances of the larger owners. The general aim of policy should be to encourage and assist these owners to develop their production and to persuade them to organise their activities, as far as a possible, on co-operative lines. Small owners include many who have uneconomic holdings which are also seriously fragmented. The experience of consolidation of holdings in Punjab, Madhya Pradesh and Bombay has established the value of this measure for small holders. We suggest that since the idea of consolidation of holdings is well understood by the peasants and they are prepared to meet a large part of the cost, in all States programmes for the consolidation of holdings should be expanded and pursued with vigour. The second important measure which has been taken in some States for the benefit of small holders relates to the fixation of a minimum holding below which subdivision is not permitted. There has been no investigation yet into the practical working of measures for the prevention of sub-division below a minimum such as have been taken in Bombay and Uttar Pradesh. It is, therefore, difficult to say to what extent they have proved immediately beneficial. They are, however, sound in conception and, while they need to be observed more closely in practice, we think that they could be extended.

21. The suggestion is sometimes made that in the event of redistribution of land belonging to substantial owners, those who have uneconomic holdings should receive additional land in order that their holdings may become economic. The effect of the proposals that we have made earlier in respect of lands of substantial owners will be to confer rights which will develop into ownership mainly on those tenants and workers who are already engaged in the cultivation of lands in excess of the limit for resumption for purposes of cultivation. In the ordinary

course, therefore, there may not be much land available for the purpose of enlarging the holdings of uneconomic owners. The problem of uneconomic holdings has certain wider aspects to which we shall refer later. The solution lies more in the direction of evolving a suitable system of co-operative management of the land of a village and the organisation of co-operative farming groups rather than in attempting too many little adjustments in the holdings of individual owners or cultivators of small plots.

22. Lands belonging to small and middle owners may be divided into two categories, namely, those under direct cultivation, and those leased to tenants-at-will. The problems which the former present are those of finance, technical assistance and organisation of co-operative activity. As regards the latter, two considerations are important. In the first place, any measures which are taken to protect the tenants of small and middle owners should be simple to administer and, as far as possible, the problems which they raise should be solved at the village level by the people themselves. Secondly, care should be taken to ensure that measures for the protection of small and middle owners do not operate seriously to reduce the movement of the people from rural areas into other occupations, whether in towns or in villages. The pressure on land is already heavy and is growing. Voluntary movement of villagers into other vocations has considerable advantage for the development of rural economic life, especially in conditions in which those who go out of the village for work retain their village roots and are encouraged to maintain an active sense of obligation towards the village community of which they continue to be members. There is little to be gained by treating the leasing of land by small and middle owners as examples of absenteeism to be dealt with along the same lines as lands belonging to substantial owners which are cultivated by tenants-at-will. At the same time, steps have to be taken to afford adequate protection to the tenants of small and middle owners.

TENANTS-AT-WILL

23. The central question to be considered in respect of tenants-at-will who are engaged in the cultivation of lands belonging to small and middle owners relates to the terms on which the latter may resume land for personal cultivation. A distinction may be made between those small and middle owners who cultivate themselves and those who do not. Land could only be resumed for cultivation by an owner himself or by the members of his family. We suggest that resumption should be permitted on this ground for the number of family holdings not exceeding three which can be cultivated by the adult workers belonging to an owner's family with the assistance of agricultural labour to the extent customary among those who cultivate their own lands. A period may be prescribed—five years for instance—during which an owner may resume for personal cultivation. If he fails to do so during this period, the tenant should have the right to buy the land he cultivates on terms similar to those suggested earlier for the tenants of the larger landholders.

24. The rights of tenants who cultivate the lands of small and middle owners need to be defined. The two principal questions to be considered relate to the period of tenancy and the rent which the tenant may have to pay. We suggest that the tenancy should ordinarily be for

five to ten years and should be renewable, resumption being permitted, as suggested earlier, if the owner himself wishes to cultivate. As regards the determination of rent, in recent years in various States, rents have been steadily reduced. In Bombay the rent of agricultural land was reduced to one-third of the produce (or its value) for unirrigated lands and to one-fourth of the produce for irrigated lands. In the Punjab, rent has been reduced from one-half to one-third of the produce for lands cultivated by owners whose holdings exceed the limit prescribed for resumption of personal cultivation. The determination of rent has to be regarded essentially as a question for consideration in the light of local conditions. The essential principle would appear to be that the rent of land should be so fixed that, having regard to his expenses of cultivation and other risks, a fair wage remains for the cultivator. While it is difficult to suggest a generally applicable maximum rate of rent, over the greater part of the country, a rate of rent exceeding one-fourth or one-fifth of the produce could well be regarded as requiring special justification.

Landless Workers

25. Schemes of land distribution are likely to confer somewhat restricted benefits on agricultural workers other than tenants. This is because in any scheme of distribution or resttlement the first claim will be that of tenants already working on lands which may be taken over from the larger owners. In view of this difficulty, the contribution which the movement for making gifts of land, which has been initiated by Acharya Vinoba Bhave, has special value, for, it gives to the landless worker an opportunity not otherwise easily available to him.

26. It would be difficult to maintain a system in which, because of accidents of birth or circumstance, certain individuals are denied the opportunity of rising in the social scale by becoming cultivators and owners of land. It is, therefore, necessary to consider the problem in terms of institutional changes which would create conditions of equality for all sections of the rural population. The essence of these changes lies in working out a co-operative system or management in which the land and other resources of a village can be managed and developed so as to increase and diversify production and to provide employment to all those who are able and willing to work. The growth of industrialisation and of tertiary services is essential if any scheme of agricultural reorganisation is to succeed. Given this condition, whether the rural economy will expand and its techniques develop rapidly enough will depend largely upon the manner in which it is reorganised.

Co-operative Farming

27. Small and uneconomic holdings are at the root of many of the difficulties in the way of agricultural development. With the growing pressure on land, their number is increasing. Where agriculture does not require much investment, natural conditions are favourable and the cultivators are skilful and industrious, it is possible that the average yield on small farms may be higher than the average for many of the larger farms. The problem in India is to secure a large increase in production over the entire area now under cultivation. This calls for the

application on a wide scale of scientific knowledge and increased capital investment in various forms. These conditions are easier to secure where land is worked and managed in fairly large units than in the form of petty and fragmented holdings. In a farm of substantial size it is possible to eliminate several wasteful operations and to ensure better planning of the use of land, including selection of crops, rotation, soil conservation, development of irrigation and introduction of improved techniques. Economies which cannot be availed of by small farms are available to large ones. By its very nature a larger unit of operation and management can secure more credit and finance and can apply these to greater advantage, can diversify its economy and can make a relatively greater contribution to the solution of the country's food problem.

28. For these reasons it is important that small and middle farmers, in particular, should be encouraged and assisted to group themselves voluntarily into co-operative farming societies. These societies may be formed on conditions such as the following :—

(*i*) The area under a co-operative farming society should not be less than a prescribed minimum. This could be fixed according to circumstances, as, say, four to six times the family holding in an area. It is perhaps not necessary to prescribe a maximum for a co-operative farming society ;

(*ii*) Preference should be given to co-operative farming societies in the matter of supplies, finance, technical assistance and marketing ;

(*iii*) In undertaking consolidation proceedings, preference might be given to villages in which co-operative farming societies are formed ;

(*iv*) Preference should be given to co-operative farming societies in leasing agricultural waste lands belonging to the Government or taken over from private owners with a view to development. Suitable assistance in bringing such lands under cultivation should also be given ;

(*v*) It could be provided that so long as a co-operative farming society continues, no adverse tenancy rights would accrue against those of its members who might not engage in personal cultivation. The object of this concession is not to affect in any way the rights of existing tenants (as they should enter the co-operative farming society as members) but to encourage individual small and middle owners to join together to form co-operatives.

A widespread extension of the practice of co-operation in non-farm as well as farm operations will be a major determining factor in achieving the rapid re-organisation of the village economy.

Co-operative Village Management

29. While the extension of co-operative farming and co-operative activities generally will do much to develop the social and economic life of the village and, in particular, will benefit small and middle landholders, the scope of rural organisation has to be conceived in wider terms. We have referred already to the fact that without a basic reconstruction of the village economy

it is not possible to create conditions of equality of opportunity for the landless agricultural workers. Even after the problems relating to lands belonging to substantial owners have been dealt with, there remains considerable disparity of interest between the small and middle owner, the tenant and the landless worker. Concessions to one section at the expense of another may certainly benefit a few, but intrinsically the measures which may be taken may not promote sufficiently the rapid increase of agricultural production or the diversification of rural economic life or the growth of greater local employment. The possibility of achieving greater social justice through regulation of contractual terms between different constituent elements in the village is soon exhausted. Apart from sharpening the conflict of interests within the rural community, proposals for further regulation become in effect proposals for sharing poverty. While the objective of family holdings with increasing emphasis on co-operative methods of organisation may represent the most practical method of translating into practical action the principal of 'land for the tiller', the effective fulfilment of this very principle requires that there should be a more comprehensive goal towards which the rural economy should be developed.

30. For several reasons it has become imperative that at the village level there should be an organisation deriving its authority from the village community and charged with the main responsibility for undertaking programmes of village development. In an earlier chapter we have suggested how these functions may be taken over by the village panchayat and how the panchayat may be strengthened for the purpose. In relation to land policy the role of the village panchayat becomes an extremely important one, because there are certain problems which none but the panchayat can deal with. These may be briefly mentioned :

(1) Tenancy legislation frequently proves infructuous because of the lack of administrative arrangements for enforcing it. It is known, for instance, that entries in revenue records relating to personal cultivation are not always correct where the owners in question have a fear of losing their lands to tenants in the event of future tenancy legislation ;

(2) While it is necessary to safeguard the interests of small and middle owners and permit them to resume land for personal cultivation, some way must be found for ensuring that the tenant who is thereby displaced has land to cultivate. It would make for cumbrous arrangements if a small owner's right to resume land for personal cultivation were made subject on each occasion to the proviso that a certain amount of land must be left for cultivation with the person who happens to be his tenant. Proposals of this character, have a limited value but the fact has to be reckoned with that they are very difficult to work and may cause much continuing friction and frustration in the daily life of the village community;

(3) It is necessary that tenants, even when they are displaced by small owners, should be able to obtain at least a minimum holding for cultivation. What the minimum should be can be determined with reference to local conditions, but the limit below which under the law, sub-division of holdings is not permitted, may be found to be a useful indication. If, for sheer lack of land, it is not possible to provide a minimum holding, then the obligation to provide work in some other form ensues ;

(4) When lands belonging to substantial owners who do not meet the standards of efficiency prescribed by the land management legislation have to be settled with new tenants, the selection has to be made by some organisation at the village level ;

(5) The cultivation of village waste lands is the responsibility of the village panchayat and for this purpose arrangements for cultivating these lands have to be made.

31. For the performance of the functions described above, the only answer appears to be that the village panchayat should become the agency for land management and land reform in the village. In other words in the case of all owners any leasing of land should be done, not directly, but through the village panchayat. Experience of the practical working of restrictions on subletting suggests that these restrictions do not work out well in practice and the need for permitting some subletting is not adequately met through the listing of a few exceptions in favour, for instance, of those who are, for any valid reasons, unable to look after their lands. In addition to being the agency through which leases of private lands belonging to small and middle owners take place, the village panchayat has also to be the body principally concerned with the management of lands belonging to substantial owners which are made available for cultivation and for village waste lands. If the village panchayat has all these functions, then it may be possible for it to provide, at any rate, holdings of minimum size for landless cultivators. Its capacity to do so may frequently be limited by the amount of land available in relation to the number of workers who have to be provided. This very factor suggests the need for planning development over groups of villages such as are comprised in community projects, and for vesting in the village panchayat functions which go beyond the management of those lands in the village which are not cultivated by their owners. In other words, the conception of co-operative management has to be extended to include the entire land of the village as well as activities for creating non-agricultural employment and providing social services.

32. The system of co-operative reorganisation which will be found most feasible in practice has to be evolved by village communities out of the practice of co-operation in various directions and according to their own needs and problems. From the side of the Government what is needed is that village communities should receive sufficient guidance and assistance and, secondly, that the law should give them the means for bringing about the necessary changes in the management of land. There are at present in progress throughout the country a number of experiments in co-operative farming and in the organisation of various activities on co-operative lines. If systematic study of this experience were made, useful suggestions which could assist the progress of co-operative effort throughout the country would emerge. There is need also for an expanding programme of training and experiments in cooperative farming and co-operative organisation. For this purpose, in the Five Year Plan Rs. 50 lakhs have been provided by the Central Government.

33. The second aspect has to be dealt with mainly through the land management legislation. It is suggested that such legislation might include a provision conferring upon the village panchayat rights of management of village lands which are either lying uncultivated or are not directly cultivated by their owners. Secondly, it could be provided that if, for instance, a

majority of the owners and occupancy tenants in a village wished to enter upon co-operative management of the land of the village, their decision should be binding on the village as a whole. To ensure confidence among all concerned, it could also be prescribed that those who express themselves in favour of co-operative management should as a body hold permanent rights in at least one-half of the land of the village, no individual holding being reckoned for this purpose in excess of the limit prescribed for resumption of personal cultivation.

34. The primary object of co-operative village management is to ensure that the land and other resources of a village can be organised and developed from the stand-point of the village community as a whole. The rights of ownership are determined by the land reforms legislation of a State. Even after a system of co-operative management is established, the rate of rent or ownership dividend to be allowed to an owner in respect of his land will be determined on the basis of the tenancy laws of a State. What the land management legislation enables a village community to do is to manage the entire area of a village, both cultivated and uncultivated, as if it were a single farm. According to circumstances, the actual cultivation could be arranged, as might be found feasible, in family holdings, through small groups working blocks of land in the village on co-operative lines or through a combination of arrangements adapted to the operations to be carried out. As techniques develop and the manpower requirements of occupations other than farming increase, still larger blocks of land could be worked co-operatively. According to their needs and experience, village communities will discover the arrangements which serve them best. There has to be a great deal of trial and experiment before patterns of organisation which will best promote the interests of the rural population can be evolved. Nevertheless, it is important to work towards a concept of co-operative village management, so that the village may become a vital, progressive and largely self-governing base of the structure of national planning and the existing social and economic disparities resulting from property, caste and status may be obliterated.

Central Organisation for Land Reforms

35. In the years following the achievement of freedom, it was natural that State Governments should endeavour to translate their programmes of land reform into action with the utmost speed. Some States carried out exhaustive enquiries before undertaking legislation. These enquiries were quite adequate for the first steps in land reform which related to the abolition of intermediary rights. Detailed information concerning the holding and cultivation of land, to which reference has been made earlier can be collected from village records. As a rule, however, such information is not available in the form and detail now required for a State as a whole or for individual districts. The stage has now been reached when new measures of land reform should be based on objective assessment of the working of measures already introduced. Since land reform affects every aspect of rural life, the evaluation of land reform programmes requires trained investigators. Within each State, therefore, there is need for some machinery for investigating and reporting upon the progress of measures of land reform. In the Central Government also there is need for an organisation which could pool knowledge

and experience gained in the States and could suggest lines for further investigation. When millions of persons are affected by measures proposed by the Central Government or by the States or by political parties, it becomes a matter of the greatest importance that proposals should be tested with reference to data which have been correctly ascertained and embody experience which has been carefully evaluated. Equally, it is important to maintain a continuous record of information concerning progress in the implementation of land reform programmes adopted by the States. To assist in the process, we recommend the establishment in the Central Government of a land reforms organisation. The details of the organisation which will be needed in connection with the implementation of a national programme of such vital importance as land reform and co-operative reorgnization of the rural economy will need to be worked out carefully. We believe that such an organisation will prove to be of considerable value both to the Central Government and the States and will help the progress of land reforms.

ANNEXURE

SIZE OF HOLDINGS

(Proprietory and occupancy holdings)

(Figures in thousands)

Size group	Number of holdings	Percentage of holdings	Area (acres)	Percentage of area	Remarks
1	2	3	4	5	6
1. *Uttar Pradesh*					
0—5 .	9,971	81·2	16,024	38·8	The entire occupied area prior to merger which was 90% of the present occupied area, was included in the inquiry.
5—10 .	1,563	12·7	10,824	26·1	
10—16 .	440	3·6	5,464	13·2	
16—25 .	190	1·6	3,694	9·0	
Over 25 acres .	114	0·9	5,310	12·9	
TOTAL .	12,278	100·0	41,316	100·0	
2. *Bombay* .					
0—5 .	1,313	52·31	3,672	14·00	Figures relate to the entire *ryotwari* area prior to merger.
5—15 .	707	28·18	6,548	24·95	
15—25 .	274	10·90	5,163	19·68	
25—100 .	201	8·02	8,114	30·92	
100—500 .	14	0·57	2,314	8·82	
500 over .	1*	0·02	428	1·63*	*The actual number is 563.
TOTAL .	2,510	100·00	26,239	100·00	
3. *Madhya Pradesh*					
0—5 .	1,296	51·5	2,856	10·0	Figures relate to 77 per cent of the total occupied area of the State. The remaining 23 per cent area not covered by the inquiry forms part of the merged territories.
5—10 .	493	19·5	3,528	12·0	
10—20 .	375	14·8	5,656	18·6	
20—50 .	269	10·7	8,453	28·9	
50—100 .	63	2.5	4,110	14·0	
100—500 .	26	0·9	3,680	12·9	
500 over .	0·93	0·04	1,067	3·6	
TOTAL .	2,522·93	100·0	29,350	100·0	

ANNEXURE—*contd.*

SIZE OF HOLDINGS—*contd.*

1	2	3	4	5	6
4. *Orissa*					
0—5 .	N.A.	74·2	N.A.	30·1	The data are based on a sample survey conducted in different parts of the State covering an area of 60,230 acres.
5—10 .	N.A.	15·3	N.A.	22·0	
10—20 .	N.A.	7·1	N.A.	20·8	
20—50 .	N.A.	3·0	N.A.	17·1	
50—100 .	N.A.	0·3	N.A.	4·1	
Over 100 acres	N.A.	0·1	N.A.	5·9	
TOTAL .		100·0		100·0	
5. *Bihar*					
0—5 .	N.A.	83·3	N.A.	N.A.	The data are based on a sample survey which was not considered adequate. The figures are, therefore, to be taken as indicative of the general situation.
5—10 .	N.A.	3·4	N.A.	N.A.	
10—15 .	N.A.	7·8	N.A.	N.A.	
15—30 .	N.A.	2·5	N.A.	N.A.	
30—50 .	N.A.	2·0	N.A.	N.A.	
50 acres and above	N.A.	1·0	N.A.	N.A.	
TOTAL .		100·0			
6. *Assam*					
0—5	N.A.	66·1	N.A.	26·0	The sample survey relates to 26,000 acres comprised in 5,295 holdings.
5—10 .	N.A.	22·5	N.A.	32·9	
Over 10 acres	N.A.	11·4	N.A.	41·1	
TOTAL .		100·0		100.0	
7. *Madras*					
Holdings assessed on :					
1. Rs. 10 and less	5,906	82·2	11,356	41·2	The data relate to the *ryotwari* area which represents *pattas* 82 per cent of the total area and represents estimates.
2. Over Rs. 10 but not exceeding Rs. 30.	822	11·4	7,504	27·2	
3. Over Rs. 30 but not exceeding Rs. 50.	264	3.7	2,826	10.2	The holdings include joint *pattas*. The area comprised in individual holdings in the larger size groups may, therefore, be considerably smaller.
4. Over Rs. 50 but not exceeding Rs. 100 (23—45 acres).	137	1·9	2,337	8·5	
5. Over Rs. 100 but not exceeding Rs. 250 (45—114 acres).	46	0·6	1,692	6·0	
6. Over Rs. 250 (over 114 acres)	14	0·2	1,876	6·9	
TOTAL .	7,189	100·0	27,591	100·0	

ANNEXURE—*contd.*

SIZE OF HOLDINGS—*contd.*

1	2	3	4	5	6
8. *Mysore*					
0—5 .	820	66·2	2,061	25·3	The entire area of the State was included in the inquiry.
5—10 .	265	21·2	2,002	24·0	
10—50 .	144	11·4	2,898	35·0	
50—100 .	11	0·9	856	10·3	
100—500 .	2	0·2	379	4·6	
Over 500 .	0·1	0·1	67	0·8	
TOTAL .	1,242	100·0	8,263	100·0	
9. *Travancore-Cochin*					
0—5 .	1,541	94·1	1,322	44 0 – 45	
5—10 .	56	3·4	368	13	
10—15 .	21	1·3	253	9	
15—25 .	11	0·7	207	7	
25—50 .	4	0·3	158	5	
50—100 .	2	0·1	118	4	
Over 100 .	1	0·1	493	~~18~~ 17	
TOTAL .	1,636	100·0	2,914	100	
10. *Pepsu*					
0—5 .	239	45·4	518	8·2	The entire area of the State was included in the inquiry.
5—10 .	93	17·6	680	10·7	
10—20 .	107	20·3	1,572	24·8	
20—50 .	771	13·4	2,072	32·6	
50—100 .	—	—	543	8·6	
100—500 .	17	3·3	227	3·5	
Over 500 .					
TOTAL .	527	100·0	6,347	100·0	
11. *Delhi*					
0—10 .	Not available				
10—20 .	30	N.A.	10	N.A.	
20—50 .	1	N.A.	45	N.A.	
50—100 .	0·2	N.A.	17	N.A.	
Over 100 .	0·1	N.A.	13	N.A.	
TOTAL .	31·3	—	85	—	

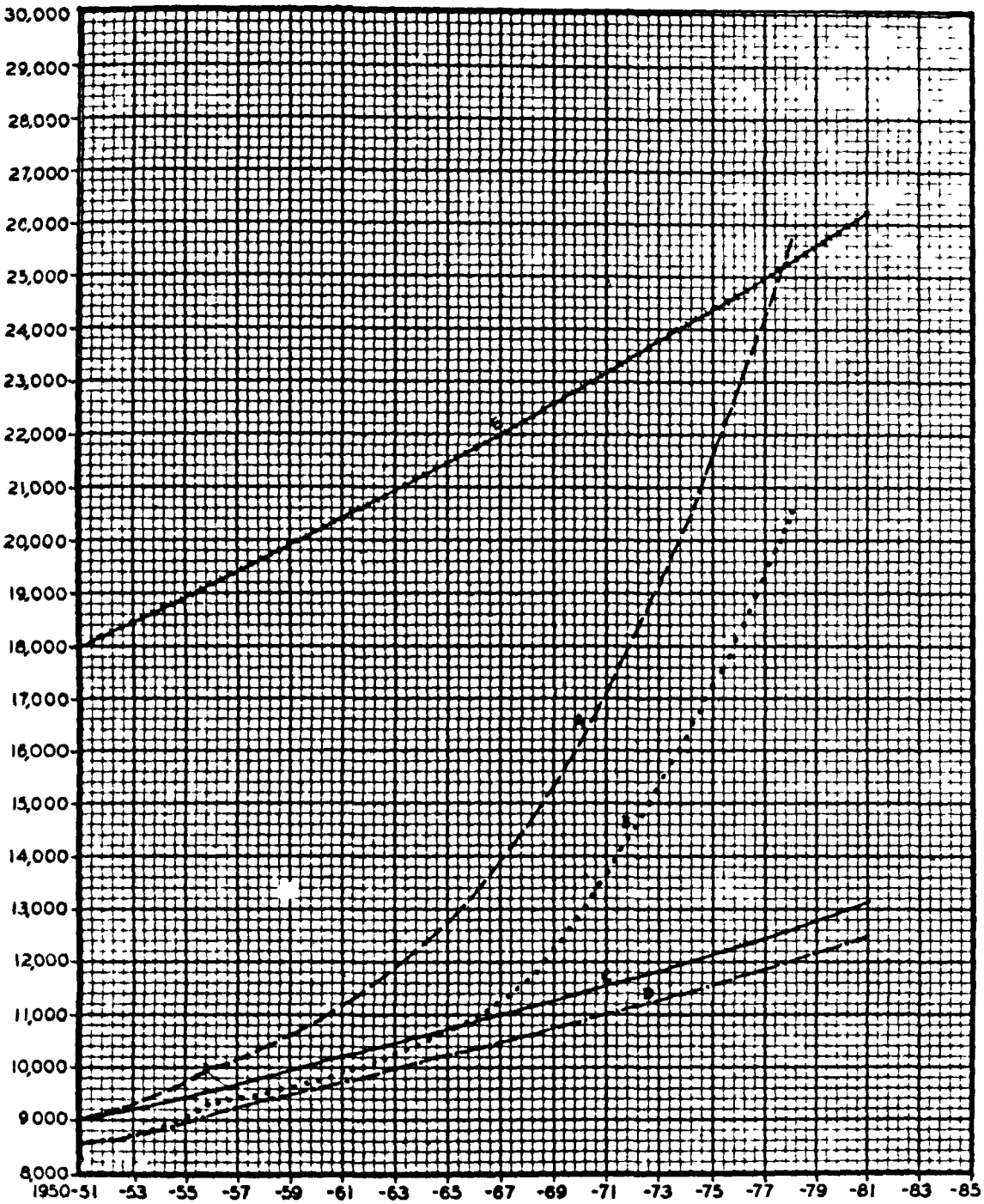
ANNEXURE—*contd.*

SIZE OF HOLDINGS—*concld.*

1	2	3	4	5	6
12. *Himachal Pradesh*					
0—5 .	69	95·0	83	71	The data relate to Chamba district only.
5—10 .	2	3·0	13	11	
10—15 .	1	2·0	12	10	
Over 15 .	1	0·1	1	8	
TOTAL .	73	100·0	109	100	
13. *Coorg*					
0—5 .	42	76·0	128	30·0	The entire area of the State is included.
5—10 .	7	12·0	54	13·0	
10—15 .	3	5·0	31	7·0	
15—25 .	2	3·0	34	8·0	
25—50 .	1	2·0	31	7·0	
50—100 .	0·5	1·0	35	8·0	
100—500 .	0·4	1·0	95	23·0	
Over 500 .	0·02	..	15	4·0	
TOTAL .	55·9	100·0	423	100·0	

14. *West Bengal*

	Percentage of cultivators according to size of holding.	
	According to Floud Commission's report (%)	According to the 1951 census (%)
0—2 acres .	41·9	34·4
2—4 acres .	20·6	27·6
Over 4 acres	37·5	38·0



ASSUMPTIONS.

1. NATIONAL INCOME IN 1950–51: RS. 9,000 CRORES.
2. AGGREGATE CONSUMPTION EXPENDITURE IN 1950–51 : RS. 8,550 CRORES.
3. INCREASE IN NATIONAL INCOME AND AGGREGATE CONSUMPTION EXPENDITURE BY 1955–56 : RS. 1,000 CRORES AND RS. 775 CRORES RESPECTIVELY.
4. PROPORTION OF ADDITIONAL INCOME REINVESTED EACH YEAR AFTER 1955–56 . 50 PER-CENT; CEILING ON INVESTMENT WHEN SAVINGS AS A PROPORTION OF AGGREGATE INCOME REACH 20% (i.e. IN 1968–69)

NOTATIONS

1. NATIONAL INCOME ON THE ABOVE ASSUMPTIONS — — — — — — — — — A
2. AGGREGATE CONSUMPTION EXPENDITURE ON THE ABOVE ASSUMPTIONS • • • • • B
3. NATIONAL INCOME REQUIRED TO MAINTAIN PER CAPITA INCOME CONSTANT AT 1950–51 LEVEL. ——————— C
4. AGGREGATE CONSUMPTION EXPEDITURE REQUIRED TO MAINTAIN PER CAPITA CONSUMPTION CONSTANT AT 1950–51 LEVEL — • — • — • — • — • — D
5. NATIONAL INCOME REQUIRED TO DOUBLE 1950–51 PER CAPITA INCOME. ++++++++++++ E

CHAPTER XIII

THE AGRICULTURAL WORKER

MAGNITUDE OF THE PROBLEM

The expression 'agricultural workers' denotes those rural workers who are employed on wages in agricultural occupations. In the census of 1951, out of a total rural population of 295 million, 249 million are shown as being engaged in agriculture. Of these, 18 per cent were returned as cultivating labourers and their dependents. The census classified the agricultural population into four classes, namely, (1) cultivators of land, wholly or mainly owned; (2) cultivators of land wholly or mainly unowned; (3) cultivating labourers; and (4) non-cultivating owners of land. Cultivating labourers were broadly defined as employees of cultivators. Since, for varying periods, small owners, tenants and artisans find themselves working as cultivating labourers, the line between agricultural workers and the other agricultural groups is subject to marginal shifts and agricultural workers may be broadly described as a residuary group in the rural community.

2. In the past, not enough attention has been given to the problems of agricultural workers and information concerning the conditions under which they live and work has been extremely meagre. Since 1949 the Central Government have been engaged in carrying out a comprehensive enquiry for the collection of data on employment, earnings, standard of living and indebtedness of agricultural workers. The object of this enquiry was to enable the Central and State Governments to initiate protective and ameliorative measures, including the fixation of minimum wages. For the purpose of this enquiry, an agricultural labour family was defined as one in which either the head of the family or 50 per cent or more of the earners reported agricultural labour as their main occupation. The field operations under the Agricultural Labour Enquiry, which embraced 813 villages selected on the basis of random sampling and 104,000 families all over the country, have now been concluded and the data are under study. The enquiry has helped already to draw attention to the significance of the agricultural worker in the country's future development and its results are likely to be of material assistance in drawing up programmes for agricultural workers.

3. Until the data obtained in the agricultural labour enquiry become available, any assessment of the magnitude of the problem of agricultural workers for the country as a whole has to be based on the returns of the census of 1951. The census shows wide variations in different parts of the country in the proportion of the agricultural population who constitute agricultural workers. Among the States in which agricultural workers constitute substantial sections of the agricultural population are Travancore-Cochin (37%), Bhopal (31%), Madras

(28%), Madhya Pradesh (27%), Bihar and Hyderabad (25%) and West Bengal (21%). Bombay, Orissa, Punjab, Madhya Bharat and Pepsu have an agricultural labour population varying between 12 to 15 per cent. Among the larger States, Uttar Pradesh has the lowest percentage (8%).

4. Agricultural workers may be classified broadly into two groups, namely, 'casual' workers and 'attached' workers. Casual workers are by far the larger group, representing in the recent enquiry undertaken by the Government of India, as many as 89 per cent of the total number. In this enquiry, 'attached' workers were defined as those who had continuous employment for one month or more at a time. The proportion of 'attached' workers is higher in some States, being about 24 per cent in the Punjab, 22 per cent in Bihar and 20 per cent in U.P. as compared, for instance, to about 6 per cent in West Bengal. Recent enquiries suggest that the period of unemployment for agricultural workers ranges from three to six months, interspersed in different seasons during the year. Plantation workers, who number about 1·2 million, constitute a distinct class of agricultural workers who are perhaps closer to industry than to agriculture.

5. Another class of agricultural labourers consists of those who leave their villages in groups for fairly long terms in search of employment. A large number of them can be seen in the more important cities without practically any shelter. As the influx of such workers is likely to continue, a first step should be to provide clean camp sites equipped with water supplies and sanitary arrangements. This would also reduce the risk of epidemics in the cities. A sample survey of such persons might give valuable information about their condition.

Approach to the Problem

6. The existence of large numbers of agricultural workers who lack sustained employment and frequently suffer from social handicaps is to be regarded as a source of serious weakness and even of instability in the present agrarian system. With the decline in rural industry, many artisans have become part-time labourers. The increase in fragmentation and subdivision of holdings has driven many peasant farmers to seek casual labour. Reduction in the larger farms which has been in progress in consequence of tenancy legislation leads to a diminution in the amount of higher employment which may be available. Few agricultural workers are dependent on agricultural labour alone; commonly they also combine other casual work with agricultural labour. Generally, agricultural workers have short periods of intensive employment, for instance, at harvest time or in sowing season or when cotton is picked. As compared to the farmer, the agricultural workers' problem, is perhaps in a larger measure one of unemployment rather than of under-employment, but the degree of unemployment depends almost entirely on the character of local agriculture and on the distance from urban centres.

7. The Five Year Plan has to be viewed as a comprehensive programme to remove the social and economic causes which account for the present condition of the agricultural workers. As a section of the village community, the economic condition of the agricultural workers depends upon the state of prosperity in the agricultural economy. The programmes under the Five Year Plan aim at increasing agricultural production substantially. Extension of irrigation, intensive cultivation and improvement in agricultural practises will increase rural employment and thus afford greater opportunity to agricultural workers. Through measures related to land reform many tenants, who are also in some part agricultural labourers, will obtain security and greater protection and will be on the way to becoming owners. Some land, especially that which is not now under the cultivation of tenants, will also be available for agricultural workers. It will be recalled that in making proposals for the reorganisation of the rural economy on co-operative lines, one of the major objects in view is to carry out changes which will rapidly place the agricultural worker in a position of equality in status and opportunity with other sections of the village community. As the economy as a whole develops, an increasing number of workers will be drawn away from the village, so that both those who move out of the village and those who remain in the village are likely to obtain more adequate employment. In addition to the industrial programmes in the Plan and those relating to transport and other fields of economic life, the Plan contains important programmes for village industries and the promotion of *khadi*. These will be of direct benefit to agricultural workers.

8. Agricultural labour populations are concentrated most in areas where population presses heavily on the land and the development in sectors of the economy other than the agricultural has been retarded. By selecting such areas for special programmes such as community development projects, it should be possible to make a distinct contribution to the problem of rehabilitating agricultural workers, for increase in the tempo of development is the effective answer to the problem of unemployment and under-employment.

9. While a number of different programmes in the Five Year Plan will promote the interests of agricultural workers, special mention may be made of two which bear directly on their welfare. In the plans of State Governments about Rs. 23 crores are provided for the amelioration of backward classes. About two-thirds of this amount should be available for backward classes other than scheduled tribes, of whom a large proportion are to be counted among the agricultural workers. The Central Government's plan has also provided a sum of Rs. 4 crores for the welfare of scheduled castes and other backward classes, in addition to programmes for scheduled tribes and scheduled areas. Furthermore, in the Central Government's plan a sum of Rs. 2 crores has been set aside for resettlement schemes for landless agricultural workers.

MINIMUM WAGES

10. Under the Minimum Wages Act, State Governments are required to fix minimum rates of wages for agricultural labour by the end of 1953. The legislation permits them to fix minimum wages for such portions of the territories or for such classes of employment

as they might consider feasible. In most States steps to implement the legislation have already been initiated. In nine States, including Punjab and Uttar Pradesh, minimum wages have been fixed. In Uttar Pradesh minimum wages have already been fixed for farms over 50 acres in twelve districts. In a number of States draft proposals are at present under final scrutiny. Enquiries to ascertain low wage pockets are in progress as in Madras. The enforcement of minimum wages for agricultural workers in low wage pockets, for the larger farms and in areas selected for intensive development should be regarded as an important aspect of the programme for improving the conditions of agricultural workers and should receive high priority. We suggest that progress in the implementation of the minimum wage legislation should be reviewed from time to time at inter-State Conferences, so that experience gained in meeting common problems may be pooled and the implementation of the legislation expedited.

House Sites

11. Agricultural workers, not being owners of land in a village, are seldom the owners of the sites on which their houses are constructed. This makes them dependent on the consent either of individual owners of land or of village proprietory bodies. Landless workers holding temporary rights over house-sites in a village should be granted rights of occupancy in them. Where the house-sites are the common property of a village, the village panchayat should be placed under obligation to grant the sites free of charge to agricultural workers who may be in occupation of them. Even where the sites belong to individuals, by persuasion if possible and by legislation if necessary, the sites should be transferred in occupancy right to the landless workers who may be in possession of them. Such provision for compensation as may be unavoidable should be made and the obligation imposed upon village panchayats to provide the sites free of charge to the landless workers either by obtaining these by way of gift from the owners in question or by settling directly with the owners. In some areas the existing village site is so congested that a new village site has to be provided for further extension. The landless, and particularly the Harijans, should be fully represented in the allotment of sites in such extensions and, wherever possible, an effort should be made to provide small allotments for kitchen gardens. In the State programmes for amelioration of backward classes, the provision of house sites and of small backyards should receive special emphasis.

12. Full support should be given to the movement initiated by Acharya Vinoba Bhave for securing land gifts for the landless by providing means of cultivation and other assistance to landless labourers selected for the allotment of the gifted land. The movement has considerable moral value and, if pressed forward, holds promise of relief in meeting some of the urgent problems of landless workers. The State Governments could make it a permanent feature of the work of rural development which might continue beyond the pioneering phase.

Labour Co-operatives

13. With the assistance of the co-operative staff, the irrigation, buildings and roads, forest and agricultural departments and other government agencies in the States should try and organise co-operatives of village labourers. Under the technical guidance of their officials, these co-operatives should be encouraged and enabled to take up contracts for specific pieces of construction work. The success of forest labourers' societies in Bombay and of certain other similar efforts elsewhere suggests that, given suitable encouragement and assistance, the formation of labour co-operatives can make an important contribution to the relief of rural unemployment and, in addition, make it possible for the government to assist more adequately with social welfare schemes and other ameliorative measures.

Resettlement Schemes for Landless Workers

14. Blocks of newly reclaimed land as well as culturable waste land should be set apart, wherever possible, for the settlement on co-operative lines of groups of landless agricultural workers and of holders of small, uneconomic plots of land. Even though the amount of land which could be thus made available would be limited and the proportion of agricultural workers who could be benefited might be small, the existence of such a scheme in each State could become a source of hope and encouragement in the lives of many families of agricultural workers and would go far to arouse confidence and enterprise in them. Within the scope of the programmes included in the Plan, there is considerable opportunity for organising co-operative settlements and colonisation schemes for agricultural workers and, as a matter of policy, the fullest use should be made of these possibilities. As already mentioned, the Plan makes a special financial provision to promote resettlement schemes for agricultural workers.

15. Being without land, agricultural workers have no security to offer. As a rule, therefore, they do not become eligible for financial assistance from the Government. While individual loans may present certain administrative difficulties, we suggest that State Governments should formulate schemes for granting financial assistance to cooperative groups of landless workers for such purposes as house building, purchase of bullocks and implements and for ancillary industries which they may wish to take up after suitable training under the auspices of Government. Special assistance by way of educational stipends and for vocational and technical training should also be offered, as indeed is already being done in many States.

16. In the past, there has been no agency on behalf of the Government for dealing with the social and economic problems of agricultural workers. The extension organisation in the districts, whose early establishment we propose elsewhere in this report, should concern itself with the problems of welfare and employment of agricultural workers no less than with those of agriculturists and every effort should be made to bring home to village panchayats their responsibility for the welfare of the agricultural worker equally with that of other sections in the community.

CHAPTER XIV

PROGRAMME FOR AGRICULTURE

In an earlier chapter we have indicated the shortages which exist in respect of foodgrains and the principal commercial crops. The problem of agricultural shortages has been intensified by certain special circumstances which arose during recent years, namely, the loss on account of Partition of about 20 million acres of irrigated land and the imperative need since 1949 of reducing the dependence of the jute and cotton industries on imported raw-materials. The programmes outlined in this chapter seek to overcome or reduce these deficiencies, to the extent possible, in respect of the major crops, namely, foodgrains, cotton, jute, oil seeds and sugarcane.

PRODUCTION TARGETS

2. The production targets in the Five Year Plan have been reached on the basis of programmes of works which aim at making specific additions to the existing production potential in each State. These programmes include, for instance, measures to bring additional areas under irrigation, to reclaim and develop new lands or bring fallow lands back to cultivation, and to extend the use of manures, fertilisers and of improved seeds. In assessing the agricultural targets which are proposed, three considerations need to be kept in view. In the first place, allowance for seasonal variations cannot be made in advance; these variations are inherent in agricultural production itself and may extend to as much as 10 percent of the average production thus upsetting all calculations. Secondly, through crop-cutting experiments and other tests, fairly reliable yardsticks about the production effects of different measures are now available for a number of States. In addition, as far as possible, in suggesting the targets every State has tried to take into account its own experience over the past few years. In the third place, estimates of increased production resulting from the programmes have been made on a cautious basis, especially in respect of schemes for the increased use of improved seed and manures and fertilisers. It is true that through improved agricultural practices and double cropping it is possible to secure a substantial increase in production in the course of a few years. On the other hand, until there is sufficient assurance that these practices have become part of the normal operations of agriculture in any area, there is some risk of over-estimation of the possible benefits which may be anticipated.

3. The targets of additional production envisaged in the Plan are as follows:—

Commodity	Quantity (in millions)	Percentage increase
Foodgrains	7·6 (tons)*	14
Cotton	1·26 (bales)	42
Jute	2·09 (bales)	63
Sugarcane	0·7 (gur tons)	12
Oilseeds	0·4 (tons)	8

*The target of 7·6 million tons of foodgrains would roughly comprise about 4 million tons of rice, 2 million tons of wheat, a million tons of gram and pulses and 0·5 million tons of other cereals.

These targets have been arrived at as a result of prolonged discussions with State Governments. They were first worked out in the summer of 1951 and early in 1952 the programmes on which they were based were reappraised in considerable detail in a series of conferences with representatives of individual State Governments. As a result of the re-appraisement the targets for cotton, jute, sugarcane and oilseeds were those indicated above. In regard to foodgrains, however, as against the initial target of 7·2 million tons, re-appraisement indicated a total increased production over the five year period of only 6·5 million tons. If allowance were to be made for diversion of area from foodgrains to commercial crops, the net increase in the production of foodgrains worked out to about 6·0 million tons. The diversion in the area from food to commercial crops or *vice versa* does not, however, follow a fixed pattern from year to year and is governed by various considerations such as seasonal factors, rotation of crops, changes in prices and the ability of the growers to finance the operations*

4. The shortfall in the original targets was recently examined by the Grow More Food Enquiry Committee. The Committee recommended additional measures so that, at the very least, the target for foodgrains proposed in 1951 for the five year period could be realised. The agricultural programme, as now presented, consists of two parts, namely, (*a*) schemes of State Governments, which together account for a total net food production target of 6·0 million tons to be achieved at a total cost of Rs. 125 crores; and (*b*) supplementary schemes proposed by the Planning Commission with a view to achieving additional food production of at least 1·6 million tons. The detailed break-up of the agricultural targets given in this chapter relates to the schemes of State Governments. During the course of implementation of the Plan, the additional schemes will be further considered in consultation with State Governments, and incorporated into the programmes of individual States. The measures now proposed as supplementary to those already included in the State programmes are as follows:—

	(Rs. crores)
(1) Additional provision for minor irrigation works . . .	30
(2) Additional programme for the construction of tubewells	6
(3) National extension organisation for intensive area development	3
(4) Supplementary allotment for Grow More Food during 1952-53	10
(5) Community projects, including 55 projects already initiated	90

Two other measures may be mentioned. In the later stages of the Plan it is expected that the fertiliser programme will be substantially enlarged. The Plan also provides for agricultural finance on a very much larger scale than has been hitherto considered possible. It is now expected that in accordance with the recommendations of the Grow More Food Enquiry Committee, by 1955-56 short-term finance to the extent of Rs. 100 crores will become available to the farmers from the Government and through the co-operative movement. During the period of the Plan about Rs. 25 crores are likely to become available by way of medium-term finance and at least Rs. 5 crores by way of long-term finance. These proposals for agricultural finance, which are described more fully in a later chapter, include the amount of finance at present made available through government agencies and the co-operative movement.

* A considerable diversion to commercial crops took place during 1951-52.

5. The precise effects on production of the expanded programmes referred to above are at present difficult to estimate in detail. They will depend upon the actual programmes which are adopted in consultation with the States. On the basis of past experience it is considered that an increase of 1·6 million tons in the production of foodgrain over and above the net estimate of 6·0 million tons on account of the present State programmes would be a cautious anticipation. Additional minor irrigation works are expected to provide an increase in food production of 0·6 million tons, community projects and intensive development area projects of 0·5 million tons, and the additional fertiliser programme of a further 0·5 million tons. Although these details have necessarily a tentative character, the general conclusion indicated above follows from the substantial increase in agricultural investment that is now contemplated and the steps which are being taken to create the necessary extension organisation. Depending upon the distribution of the additional investment as between different States, some increase in the production of commercial crops is also to be expected; for the present, however, the targets already worked out are being retained.

6. Whereas after the achievement of the targets outlined above the deficiency in foodgrains will have been largely met, gaps will still remain in respect of the commercial crops, though they will be considerably reduced. The Plan, therefore, provides for imports upto 1·2 million bales of cotton and 0·8 million bales of jute.

The Programme

7. The increase of 6·5 million tons in food production through programmes worked out by State Governments as distinguished from the supplementary programmes mentioned in paragraph 4, is expected to be achieved as follows:—

	(million tons)
Major irrigation works	2·01
Minor irrigation works	1·78
Land reclamation and development	1·51
Manures and fertilizers	0·65
Improved seeds	0·56
Total	6·51

The break-up of 6·5 million tons by States is given in Appendix I to this chapter. The total area expected to receive irrigation from major and minor irrigation works during the period of the Plan is outlined in Appendix III. Including 3 million acres to be irrigated as a result

of the additional minor works programme costing Rs. 30 crores, to which reference has been made above, the total area which will come under irrigation during the period of the Plan is 19.7 million acres. Of this, minor irrigation works account for 11·2 million acres as below:—

	(million acres)
(*a*) Schemes of State Governments	
1. Dams and channels	4·4
2. Wells (new and repaired)	1·6
3. Tube-wells (other than those included under major irrigation)	0·7
4. Tanks (improvement and construction)	0·8
5. Pumping installations	0·7
TOTAL (*a*)	8·2
(*b*) Additional minor irrigation programme (Rs. 30 crores)	3·0
TOTAL (*a*) and (*b*)	11·2

The details of the minor irrigation programme included in the State Plans will be found in Appendix IV. The total cost of the minor irrigation schemes including the special provision of Rs. 30 crores comes to about Rs. 77 crores. In addition, about a third of the expenditure on development in a community project is devoted to irrigation so that, with the progress of community projects, a larger area than that indicated above is likely to receive irrigation from minor works. In the execution of the minor irrigation programme three considerations have to be kept in view. Firstly, the schemes should be selected after a proper survey of the potentialities. Secondly, in selecting schemes a priority should be accorded to existing works which have gone out of use for lack of repairs and can be repaired at reasonable cost. Lastly, the benefits of minor irrigation schemes have been seen not to last for long for want of adequate arrangements for their repair and it is, therefore, necessary that the responsibility for the maintenance of the works be placed on local communities and, if necessary, a cess levied for the purpose.

8. The programme for land reclamation and development on which a total sum of Rs. 25 crores is provided in State Plans and Rs. 10 crores in the Central Plan on account of the Central Tractor Organisation envisages the reclamation of about 7.4 million acres of land. Of this, the Central Tractor Organisation is expected to reclaim 1.4 million acres and State Tractor Organisations 1.2 million acres. Reclamation by farmers with the assistance of State Governments and measures to bring recent fallows back into cultivation are expected to result in the development of a total area of 4.8 million acres. The bulk of this area lies in Hyderabad and Madhya Pradesh. It is important that in their agricultural programmes these two States should make adequate administrative arrangements to ensure that the proposed reclamation programme will be fulfilled. The Central Tractor Organisation expects to reclaim during the five-year period, 474,000 acres in Madhya Pradesh, 238,000 acres in U.P., 300,000 acres in Madhya Bharat, 400,000 acres in Bhopal and 4,000 acres in Vindhya Pradesh. Several States thave been building up their own tractor organisations,

Details of area to be reclaimed in different States under the Plan are given in Appendix V. The Plan also provides for land improvement operations such as bunding and drainage to the extent of about 3 million acres and extension of mechanised cultivation to the extent of 3.4 million acres. Details of these programmes are also given in Appendix V.

9. Although the use of fertilisers has developed fairly rapidly during the past few years, there is considerable scope for further expansion and estimates of fertiliser requirements proposed in relation to the Five-Year Plan may be considered moderate. Agricultural programmes of the States assume an annual supply of 446,000 tons of nitrogenous fertilisers, 79,000 tons of superphosphates and 20,000 tons of bonemeal. It is expected, however, that during the course of the Plan the quantities which would in fact be available, after allowing for plantations and industries and assuming imports at an annual figure of about 150,000 tons, will be 610,000 tons of nitrogenous fertilisers and 176,000 tons of superphosphates in addition to 50,000 tons of bonemeal. It, therefore, follows that if imports are at the level indicated above, an additional fertiliser programme to the extent of about 300,000 tons can be undertaken by the end of the Plan. It is proposed to work out programmes for the utilisation of additional quantities of fertilisers. Some increase in production as a result of the increased use of organic manures which are locally available and constitute one of the most important items of rural extension work is also expected, but a quantitative estimate is not at present possible.

Commercial Crops

10. Production programmes for commercial crops and, in particular, for cotton and jute are more recent than those for food crops. Programmes prepared for individual crops some times overlook the fact that, except for the price factor, the basic conditions which favour increase in production in one direction also favour increase in production in others. Agricultural production in any area should, therefore, always be viewed and planned for as one whole. Administratively, production programmes for commercial crops have not yet been fully integrated with those relating to food crops. In respect of programmes for commercial crops, the Central Government are guided mainly by the views of commodity committees for cotton, jute, sugarcane, and oil seeds. The commodity committees for cotton and oil seeds derive their resources from special cesses while finance for sugarcane is provided from excise funds. These Committees are expected to finance the production programmes during the period of the Plan as follows:—

Cotton	3·5 crores.
Sugarcane	1·3 crores.
Oilseeds	0·5 crores.

For jute there is no separate cess and the Plan provides a sum of Rs. 50 lakhs. The break-up of the targets by States for commercial crops has been given in Appendix II.

11. Production targets for commercial crops which were worked out in the summer of 1951 and were re-assessed early this year assume the continuance, broadly speaking, of the structure of relative prices between foodgrains and other crops which prevailed at the time. It is obvious that the production of these crops is influenced by price changes to a much greater extent than food production. It is, therefore, important to stress that during the period of the Plan any attempt to offer price incentives of a varying order for different crops should be avoided. Secondly, the maintenance of adequate degree of control over the prices of different agricultural commodities continues to be the essential condition of all agricultural planning. Here it is sufficient to state that excessive price stimuli in favour of some crops, either through deliberate alteration of prices or through relaxation of controls, may frequently have the effect of jeopardising the achievement of the agricultural targets under the Five Year Plan. Price policy remains therefore, a pre-eminent factor in the fulfilment of the agricultural plan.

Other Agricultural Products

12. Besides foodgrains, oil-seeds and sugar-cane, the production of fruits, vegetables, fish, milk and dairy products, which constitute important elements in the diet of the people, has to be systematically encouraged. Proposals relating to the production of fish, milk, and dairy products are described in subsequent chapters. It is considered that fish production might increase by about 50 per cent., from 1·0 million tons in 1950-51 to 1 5 million tons in 1955-56. Milk yields may increase by about 20 per cent., as a result of improvement in the breed of cattle and increase in the availability of fodder and feeds. Schemes for increasing the production of fruits and vegetables and other subsidiary foods *e.g.*, potatoes and tapioca figure in the programmes of some of the States and also qualify for assistance from the Centre as 'Grow More Food' schemes. It is not, however, possible to assess precisely the cumulative effect of these schemes. With the establishment of an adequate extension service, the implementation of these schemes may be expected to become more sustained than it is at present.

The Effect of the Programme

13. It is difficult to forecast the effect of the agricultural programme on the crop pattern with any degree of precision. This is due to the fact that the decision of the cultivator to raise a crop is based on factors like prices, weather conditions, availability of capital resources, and supplies which vary from season to season. Even areas under rice and wheat may be diverted to crops like sugar cane, fruits and vegetables when irrigation is provided. Sugarcane, cotton and jute afford recent examples of the effect of prices on the crop pattern. Improvement in transport facilities, growth of urban areas, changes in food habits also at times affect the acreage under different crops. The influence that each one of these factors

exercises has to be studied in detail so that some basis for making estimates might become available. On the basis of the material available to us and taking into account the fact that the cropped and irrigated areas are likely to increase by 10* and 20 million acres respectively, the following pattern of crops may be anticipated at the end of the period of the Plan.

(Area in million acres)

	1950-51	1955-56
Rice	76·0	80·0
Wheat	24·0	27·0
Other cereals	93·0	90·0
Gram and pulses	47·2	49·0
Cotton	14·6	18·0
Jute	1·4	2·0
Sugarcane	4·2	4·5
Oil seeds	26·7	27·0
Fruits and vegetables	5·0	6.0
Other crops	25·0	24·0
TOTAL	317·1	327·5

AGRICULTURAL PLANNING

14. In presenting the programmes described in this chapter, it may be useful to say a word about some of the implications of agricultural planning. The national targets of additional production or targets proposed for individual States indicate in a broad way the magnitude of the effort that is contemplated. They are of material assistance in laying down overall policies concerning prices of agricultural commodities and the allocation of resources for different programmes. They are, however, no more than a starting point for the actual planning which has to be done at different levels, from the village upwards. Agricultural production is subject to so many hazards that under the most favourable conditions any targets that may be proposed are essentially rough estimates which may be realised if certain assumptions hold good. In each State the targets have to be broken up by districts and, within each district, by *tahsils* or *taluks*. Where the programmes already contemplated do not seem to promise the desired results, provided the necessary potential is available, these programmes should be suitably expanded or supplemented. Detailed agricultural planning will be possible in areas in which intensive development is undertaken through the rural extension service, for instance, in community project areas. In these areas special stress is to be laid on building up the village agency for development and on strengthening the co-operative movement. For an area as small as a development block, on the basis of local knowledge and experience, it should be possible to frame production programmes and provide for positive measures to ensure their fulfilment subject, of course, to circumstances such as failure of rainfall or floods.

*This includes 7·4 million acres of reclaimed area and anticipated increase of 3 million acres in double cropped area.

15. Within the development block production has to be guided and aided in the main through the agency of the village body concerned with development. As a rule, it is unlikely that there is much to be gained by attempting to fix areas or proportions of individual holdings for particular crops. On the whole, it is best that each farm and each village should follow the crop plan which will enable it to utilize the available physical resources to the greatest advantage. Removal of large disparities between the return on the main competing crops is an obligation of overall policy rather than of detailed agricultural planning. To the extent to which individual farms join into co-operatives, crop planning will become the means, not merely for regulating production, but also for expanding it to the greatest extent possible. The first stage in developing an adequate structure for agricultural planning may be to carry the targets at least as far as individual development blocks where intensive work is undertaken, and in a less detailed manner, as far as tahsils and taluks. After some years of intensive development and experiment it should become possible to ensure that agricultural targets in each State and for the country as a whole are related, on the one hand, to obligations which individual farms and villages accept and, on the other, to the goals of national agricultural policy.

APPENDIX I

TARGETS OF ADDITIONAL PRODUCTION 1955-56

(Foodgrains)

(*para* 7)

(In 000' tons)

State	Major irrigation	Minor irrigation	Land reclamation and development	Fertilizers and manures	Improved seeds	Total
1	2	3	4	5	6	7
Part 'A' States—						
1. Assam	77·0	104·0	25·0	4·0	45·9	255·9
2. Bihar	123·0	353·3	166·3	133·3	included under Col. (5)	775·9
3. Bombay	94·5	86·8	76·0	65·9	53·3	376·5
4. Madhya Pradesh	23·1	25·7	214·5	15·2	2·5	281·0
5. Madras	205·9	286·5	81·2	174·4	142·0	890·0
6. Orissa	52·6	86·4	63·3	43·3	14·0	259·6
7. Punjab	371·1	32·8	11·7	4·6	43·6	463·8
8. Uttar Pradesh	386·0	209·0	300·0	28·0	60·0	983·0
9. West Bengal	314·9	183·2	22·6	20·4	12·0	553·1
TOTAL	1648·1	1367·7	960·6	489·1	373·3	4838·8
Part 'B' States—						
10. Hyderabad	41·4	196·4	255·0	48·9	82·8	624·5
11. Madhya Bharat	10·0	4·4	113·8	13·6	26·3	168·1
12. Mysore	11·0	35·2	23·5	11·7	16·1	97·5
13. Pepsu	62·2	57·0	32·5	2·8	16·0	170·5
14. Rajasthan	153·3	23·3	2·3	4·1	3·0	186·0
15. Saurashtra	40·7	31·7	0·3	8·6	1·0	82·3
16. Travancore-Cochin	42·0	7·5	14·3	52·5	14·8	131·1
TOTAL	360·6	355·5	441·7	142·2	160·0	1460·0
Part 'C' States—						
17. Ajmer	..	4·7	..	5·1	2·7	12·5
18. Bhopal	..	20·6	74·2	3·0	6·0	103·8
19. Bilaspur	..	2·9	0·5	1·2	0·1	4·7
20. Coorg	..	2·0	1·0	..	..	3·0
21. Delhi	..	1·7	1·3	0·4	1·1	4·5
22. Himachal Pradesh	..	20·0	13·0	0·3	11·1	44·4
23. Kutch	..	5·5	..	0·2	*	5·7
24. Tripura	..	0·2	..	0·2	1·9	2·3
25. Vindhya Pradesh	..	3·6	20·2	6·2	0·4	30·4
TOTAL	..	61·2	110·2	16·6	23·3	211·3
Total State Schemes	2008·7	1784·4	1512·5	647·9	556·6	6510·1
Supplementary Schemes	..	600·0	..	500·0	..	1600·0†
GRAND TOTAL—Gross target (Indian Union)	2008·7	2384·4	1512·5	1147·9	556·6	8110·1†
Less on account of diversion to commercial crops						(—)500·0
Net target of foodgrains (Indian Union)						7610·1

* Less than 50 tons.

†Includes 0·5 million tons on account of community projects & intensive areas.

APPENDIX

TARGETS OF ADDITIONAL
(Commercial

State	Cotton (000' bales)				Jute (000' bales)	
	Production in 1950-51	Additional Production during 1951-56	Production during 1955-56 (Col. 2+3)	Per cent increase over 1950-51	Production in 1950-51	Additional Production during 1951-56
1	2	3	4	5	6	7
1. Assam	12	..	12	..	809	225
2. Bihar	3	..	3	..	658	390
3. Bombay	803	275	1078	34	..	..
4. Madhya Pradesh	510	170	680	33	..	..
5. Madras	348	180	528	52	..	..
6. Orissa	2	..	2	..	242	200
7. Punjab	196	150	346	78	..	..
8. Uttar Pradesh	45	40	85	89.	49	250
9. West Bengal	..	..	..	..	1496	1000
10. Hyderabad	260	200	460	77	..	..
11. Pepsu	175	80	255	46	..	..
12. Rajasthan	114	50	164	44	..	..
13. Madhya Bharat	219	92	311	42	..	..
14. Mysore	33	8	41	24	..	..
15. Saurashtra	216	6	222	3	..	..
16. Bhopal	4	6	10	150	..	..
17. Delhi	..	..	..	..	..	..
18. Vindhya Pradesh	..	..	..	..	..	..
19. Kutch	'4	1	5	25	..	..
20. Tripura	..	..	..	..	47	25
21. Other States	27	..	27	..	--	--
22. Indian Union	2971	1258	4229	42	3301	2090

II

PRODUCTION 1955-56
Crops)

Sugarcane (000' tons)						Oilseeds (000' tons)			
Production during 1955-56 (Col. 6 +7).	Per cent. increase over 1950-51	Production in 1950-51	Additional Production during 1951-56	Production during 1955-56 (Col. 10 +11)	Per cent increase over 1950-51	Production in 1950-51	Additional Production during 1951-56	Production during 1955-56 (Col. 14 +15).	Per cent. increase over 1950-51
8	9	10	11	12	13	14	15	16	17
1034	28	68	..	68	..	55	..	55	..
1048	59	309	50	359	16	60	..	60	.
..	..	543	87	630	16	745	10	755	1
..	..	54	..	54	..	241	10	251	4
..	..	716	80	796	11	1833	100	1933	5
442	83	109	..	109	..	73	4	77	5
..	..	364	70	434	19	89	4	93	4
299	510	2903	400	3303	14	767	61	828	8
2496	67	96	..	86	..	55	5	60	9
..	..	191	..	191	..	498	150	648	30
..	..	73	7	80	9	21	1	22	5
..	..	16	..	16	..	114	16	130	14
..	..	36	..	36	..	152	25	177	16
..	..	76	..	76	..	74	5	79	7
..	..	48	..	48	..	247	1	248	..
..	..	8	4·6	12·6	57	10	4	14	40
..	..	2	0·2	2·2	10	..	..	..	..
..	..	5	1·2	6·2	24	49	3	52	5
..	..	1	..	1	..	1	1	2	100
72	53	6	..	6	..	3	..	3	..
..	..	2	..	2	..	16	..	16	..
5391	63	5615	700	6315	12	5103	400	5503	8

APPENDIX III

IRRIGATION PROGRAMME

(para 7)

(In 000' acres)

State	Cultivated area (1949-50)	Irrigated area (1949-50)	Extension of irrigation during the Plan period			Area to be under irrigation in 1955-56 (Colm. 3+ Colm. 6)	Irrigated area as Percentage of cultivated area		Percentage increase in irrigated area (Col. 6 over Col. 3)	State's share in the total increase (percentage of figures in Colm. 6 to the total)
			Minor	Major	Total		1949-50 (Col. 3 over Col. 2)	1955-56 (Col. 7 over Col. 2)		
1	2	3	4	5	6	7	8	9	10	11
Assam	7,309	1,327	770	218	988	2,315	18·2	31·7	91·3	5·9
Bihar	27,585	5,595	2,086	675	2,761	8,356	20·3	30·3	64·5	16·5
Bombay	48,124	1,761	582	474	1,056	2,817	3·7	5·9	60·0	6·3
Madhya Pradesh	33,375	1,691	86	114	200	1,891	5·1	5·7	11·9	1·2
Madras	41,024	9,850	556	435	991	10,841	24·0	26·4	9·8	5·9
Orissa	7,528	1,672	434	741	1,175	2,847	22·2	37·8	73·2	7·0
Punjab	13,828	4,790	243	1,547	1,790	6,580	34·6	47·6	30·6	10·7
Uttar Pradesh	42,331	10,878	1,110	1,361	2,471	13,349	25·7	31 5	20·6	14·8
West Bengal	12,879	2,329	933	1,512	2,445	4,774	10·1	37·1	105·7	14·6
TOTAL PART 'A' STATES	233,983	39,893	6,800	7,077	13,877	53,770	17·1	23·0	34·8	82·9
Hyderabad	37,183	1,488	330	306	636	2,124	4·0	5·3	42·7	3·8
Jammu & Kashmir	1,962	701	...	...	...	701	35·7	35·7	...	...
Madhya Bharat	11,861	462	40	83	123	585	3·9	4·9	26·6	0·7
Mysore	8,263	1,152	169	30	199	1,351	13·9	16·3	17·0	1·2
PEPSU	4 991	1,845	310	243	553	2,398	37·0	48·0	30·0	3·3
Rajasthan	11,247	1,503	193	480	673	2,176	13·4	10·3	45·0	4·0
Saurashtra	7,044	315	105	108	213	528	4·5	7·5	67·5	1·3
Travancore-Cochin	2,897	940	30	17	55	995	32·4	34·3	4·9	0·4
TOTAL PART 'B' STATES	85,448	8,406	1185	1267	2452	10,858	9·8	12·7	29·2	14·7
Ajmer	616	117	7	...	7	124	19·0	20·1	6·0	...
Bhopal	1,658	17	59	...	59	76	1·0	4·6	347·1	0·3
Bilaspur	90	5	10	...	10	15	5·6	16·7	200·0	0·1
Coorg	205	7	...	...	...	7	3·4	3·4	...	...
Delhi	236	68	11	...	11	79	28·8	33·5	22·9	0·1
Himachal Pradesh	622	135	83	75	158	293	21·7	47·1	117·0	1·0
Kutch	2,207	69	110	38	148	217	3·1	9·8	214·5	0·9
Tripura	401	...	2	...	2	2	...	0·5	...	...
Vindhya Pradesh	5,108	196	9	...	9	205	3·0	4·0	4·1	...
TOTAL PART 'C' STATES	11,143	614	291	113	404	1018	5·5	9·1	65·8	2·4
GRAND TOTAL	330,574	48,913	8,276	8,457	16,733	65,646	14·8	19·9	34·2	100·0

APPENDIX IV

FIVE YEAR PROGRAMME

Minor Irrigation Works area benefited

(*para* 7)

(In 000' acres)

State	New Wells	Old Wells	Tube-Wells	Tanks	Pumping installation on rivers	Pumping installation on wells.	Dams, Channels etc.	Total
1	2	3	4	5	6	7	8	9
1. Assam	..	..	..	.	2·5	..	767 0	769·5
2. Bihar	106·3		172·0		138 0	89 0	1581·0	2086 3
3. Bombay	128·0	..	8·7	203·0	27·0	.	215 1	581 8
4. Madhya Pradesh	22 8	6·0	.	20 7	12·6	2·9	20 8	85 8
5. Madras	31·9	...	43 2	150·0	25·0	199·4	107·0	556 5
6. Orissa	...	.	...	..	.	3·0	431·0	434 0
7. Punjab	27·0	6·0	180·0	...	...	30·0	..	243 0
8. Uttar Pradesh	457·5	392·5	105 0	...	1·7	...	154·0	1110·7
9. West Bengal	...	...	...	168·0	65·0	...	700·0	933·0
10. Hyderabad	39·0	9·0	...	107·8	...	22·9	151·8	330·5
11. Madhya Bharat	17·6	10·1	...	...	...	12·2	...	39·9
12. Mysore	13·2	...	...	25·0	...	7·8	123·0	169·0
13. PEPSU	102·3	55·7	84·0	...	...	63·2	5·0	310·2
14. Rajasthan	80·0	25·6	43·0	40·5	...	3·6	...	192·7
15. Saurashtra	40·0	20·0	...	...	...	...	45·0	105·0
16. Travancore-Cochin	4·5	...	...	5·5	23·0	4·6	...	37·6
17. Ajmer	0·3	6·9	...	...	...	...	...	7·2
18. Bhopal	0·6	7·2	15·0	9·0	7·2	...	19·5	58·5
19. Bilaspur	...	...	...	...	...	...	10·0	10·0
20. Delhi	8·8	0·2	...	...	2·0	...	...	11·0
21. Himachal Pradesh	2·0	...	9·2	...	1·8	...	70·0	83·0
22. Kutch	20·0	4·8	...	37·8	2·0	...	45·2	109·8
23. Tripura	...	...	...	2·3	...	...	...	2·3
24. Vindhya Pradesh	1·2	...	...	...	4·0	2·6	1·4	9·2
TOTAL	1103·0	544·0	660·1	769·6	311·8	441·2	4446·8	8276·5

APPENDIX V

FIVE YEAR PROGRAMME

Land Reclamation and Development

(In 000' acres)

State	Reclamation by					Land Development	
	Central Tractor Organisation	State Tractor Organisation	Private parties with State help	Other means including fallows	Total	Bunding, drainage etc.	Mechanical cultivation
1	2	3	4	5	6	7	8
Assam	...	..	...	...	...	358·5	130·0
Bihar	...	45·0	...	180·0	225·0	639·0	...
Bombay	...	10·0	...	...	10·0	1005·4	1635·6
Madhya Pradesh	474·0	378·9	339·0	1000·0*	2191·9	106·7	45·0
Madras	..	..	198·5	..	198·5	47·4	565·0
Orissa	..	175·6	150·0	..	325·6	...	..
Punjab	...	50·0	...	...	50·0	97·5	25·0
Uttar Pradesh	238·0	162·0	125·0	..	525·0	300·0	...
West Bengal	...	68·0	48·3	..	116·3	...	19·9
TOTAL PART 'A' STATES	712·0	889·5	860·8	1180·0	3642·3	2554·5	2375·5
Hyderabad	..	92·4	64·0	2000·0*	2156·4	...	154·0
Madhya Bharat	300·0	100·0	30·0	370·0	800·0	17·4	10·0
Mysore	..	13·2	...	...	13·2	7·4	150·0
PEPSU	...	68·3	76·0	65·7	210·0	130·0	566·2
Saurashtra	...	...	...	.	...	13·7	...
Travancore-Cochin	...	...	...	50·0	50·0	...	..
TOTAL PART 'B' STATES	300·0	273·9	170·0	2485·7	3229·6	168·5	880·2
Bhopal	400·9	14·0	...	2·5	416·5	160·0	30·7
Bilaspur	...	...	1·0	0·4	1·4	...	...
Delhi	...	0·4	...	5·8	6·2	9·1	4·0
Himachal Pradesh	..	...	...	...	...	64·8	...
Kutch	...	...	...	...	...	8·0	20·0
Vindhya Pradesh	4·0	20·0	44·8	16·0	84·8	68·0	72·4
TOTAL PART 'C' STATES	404·0	34·4	45·8	24·7	508·9	309·9	127·1
TOTAL INDIAN UNION	1416·0	1197·8	1076·6	3690·4	7380·8	3032·9	3427·8

*These areas represent fallow lands which will be brought under cultivation.

CHAPTER XV

COMMUNITY DEVELOPMENT AND RURAL EXTENSION

I—BASIC PRINCIPLES

Community Development is the method and Rural Extension the agency through which the Five Year Plan seeks to initiate a process of transformation of the social and economic life of the villages. The Plan provides Rs. 90 crores for community projects and proposes the establishment over a period of about ten years of a network of extension workers throughout the country. The object of this chapter is to indicate briefly the significance of the two programmes and their place in national reconstruction.

2. For some three decades rural development work has been undertaken by different branches of the administration in the States. Until a few years ago, the expenditure on development was meagre and rural development work was thought of largely in terms of particular items of improvement in village life and in agricultural practice, and special attention was given, for instance, to the number of wells sunk or repaired, for the supply of irrigation or drinking water, the supply of seeds or fertilisers, or the number of manure pits dug, starting of rural credit societies etc. These are essential items in any rural programme, but there was no coordinated approach to village life as a whole.

3. If one goes back to the study of the efforts made before World War II in individual Provinces and States and considers the experience gained in later years in Sevagram in Madhya Pradesh, in the Firka Development scheme in Madras, in the Sarvodaya centres in Bombay, in Etawah and Gorakhpur in Uttar Pradesh and other centres which are perhaps less well known, certain broad conclusions emerge. These are :

(*i*) When different departments of the Government approach the villager, each from the aspect of its own work, the effect on the villager is apt to be confusing and no permanent impression is created. The peasant's life is not cut into segments in the way the Government's activities are apt to be ; the approach to the villager has, therefore, to be a coordinated one and has to comprehend his whole life. Such an approach has to be made, not through a multiplicity of departmental officials, but through an agent common at least to the principal departments engaged in rural work, whom it is now customary to describe as the village level worker.

(*ii*) Programmes which have been built on the cooperation of the people have more chances of abiding success than those which are forced down on them.

(*iii*) While the official machinery has to guide and assist, the principal responsibility for improving their own condition must rest with the people themselves. Unless they feel that a programme is theirs and value it as a practical contribution to their own welfare, no substantial results will be gained.

(*iv*) Programmes largely dependent on expenditure by the Government, in which the elements of self-help and mutual cooperation on the part of villagers are present only in a nominal degree are shortlived. The essential idea should be the reduction of chronic unemployment which is a feature of rural life—through the practice of scientific agriculture and cottage and small-scale industries.

(*v*) Advice and precept are of no avail unless they are backed by practical aids—supplies of seed and fertiliser, finance and technical guidance for solving the farmer's immediate problems.

(*vi*) Whatever the measures of the effort which the Government wishes to make, the best results will be gained if the programmes are pursued intensively, and practically every agriculturist family has its own contribution to make through a village organisation.

(*vii*) The approach to the villager would be in terms of his own experience and problems, conceived on the pattern of simplicity, avoiding elaborate techniques and equipment until he is ready for them.

(*viii*) There has to be a dominant purpose round which the enthusiasm of the people can be aroused and sustained, a purpose which can draw forth from the people and those who assist them on behalf of the Government the will to work as well as a sense of urgency. The aim should be to create in the rural population a burning desire for a higher standard of living—a will to live better.

II—Community Development Programme

These lessons from the experience of the past have been brought together in the conception and concrete formulation of the community development programme, which has been launched during 1952. While the concept is not a new one, progress has in the past been hampered by insufficiency of available funds.

Size of the unit

2. For each community project, as at present planned, there will be approximately 300 villages with a total area of about 450 to 500 square miles, a cultivated area of about 150,000 acres and a population of about 200,000. The project area is conceived as being divided into 3 Development Blocks, each consisting of about 100 villages and a population of about 60,000 to 70,000. The Development Block is, in turn, divided into groups of 5 villages each, each group being the field of operation for a village level worker.

Location of Units

3. The initial programme has been started with approximately 55 Projects of rural development located in select areas in the several States of India. A certain degree of flexibility is allowed in the actual allotment of projects. Thus, while many are complete projects of about 300 villages each, some are also independent development blocks of about 100 villages each, depending upon the needs and conditions of the particular areas chosen for development.

4. As increased agricultural production is the most urgent objective, one of the basic criteria in the selection of this first set of Project areas has been the existence of irrigation facilities or assured rainfall. In assessing irrigation facilities and the possibilities of development, irrigation from river valley projects, from tubewells, as well as from minor irrigation works, have been taken into account. In States like West Bengal and Punjab, with a large population of displaced persons, the selection of project areas aims also at helping the resettlement of these persons. Seven areas have been selected on the ground of thei being inhabited predominantly by scheduled tribes. In every field of activity, whether social or economic, urban and rural development are complementary, for, neither towns nor villages can advance alone. Where the existing urban facilities are inadequate or where large numbers of displaced persons have to be rehabilitated, the intention is that the urban development should take the form of new townships. Six such projects have been proposed to be taken up under the current programme.

Under such rural-*cum*-urban development, new towns will come into existence to serve as centres which will draw sustenance from the surrounding countryside and, in return, carry to it new amenities and the spirit of a developing and changing economy. The creation of new centres of small-scale industrial production, closely coordinated with rural development, is fundamental to national development, for in no other way can the present occupational imbalance between agriculture and industry, between village and town, be corrected. With the development of power resources and of communications and the growth of basic industries, the scope for establishing such centres will steadily increase and, as the economy develops, this programme will gain in importance. During the first few years, however, it is inevitable that by far the greatest stress in community development, as indeed in national planning, should be on rural areas. The intensive development of agriculture, the extension of irrigation, rural electrification and the revival of village industries, wherever possible, with the help of improved techniques, accompanied by land reform and a revitalised cooperative movement, are programmes closely related to one another, and together calculated to change the face of the rural economy.

Main lines of activity

5. The main lines of activity which will be undertaken in a community project, can be briefly divided into the following :

Agriculture and related matters.
Irrigation.
Communications.
Education.
Health.
Supplementary employment.
Housing.
Training.
Social Welfare.

Agriculture and related matters

6. The programme includes reclamation of available virgin and waste land ; provision of commercial fertilizers and improved seeds ; the promotion of fruit and vegetable cultivation, of improved agricultural technique and land utilisation ; supply of technical information, improved agricultural implements, improved marketing and credit facilities ; provision of soil surveys and prevention of soil erosion, encouragement of the use of natural and compost manures and improvement of livestock, the principal emphasis here being on the establishment of key villages for breeding pedigree stock and the provision of veterinary aid, as well as artificial insemination centres. For attaining this objective, agricultural extension service will be provided at the rate of one agricultural extension worker for every 5 villages.

One of the important functions of the agricultural extension worker will be to encourage the growth of a healthy cooperative movement. The aim will be to see that there is at least one multi-purpose society in every village or group of villages on which practically every agriculturist family is represented.

It is expected " that the cooperative principle, in its infinitely varying forms, will be capable of adaptation for finding a solution to all problems of rural life." Multi-purpose societies will therefore have to be used for practically every development activity in the community project area, including the encouragement of rural arts and crafts.

Irrigation

7. The programme visualises provision of water for agriculture through minor irrigation works, *e.g.*, tanks, canals, surface wells, tubewells, etc., the intention being that at least half of the agricultural land, if possible, be served with irrigation facilities.

Communications

8. The road system on the country side is to be so developed as to link every village within the Project area upto a maximum distance of half a mile from the village, the latter distance being connected by feeder roads through voluntary labour of the villagers themselves, only the main roads being provided for and maintained by the State or other public agencies.

Education

9. It has been realised that the full development of a community cannot be achieved without a strong educational base, alike for men and women. The community projects have been planned to provide for social education, expansion and improvement of primary and secondary education and its gradual conversion to basic type, provision of educational facilities for working children and promotion of youth welfare.

Vocational and technical training will be emphasised in all the stages of the educational programme. Training facilities will be provided for imparting improved techniques to existing artisans and technicians, both in urban and rural areas. Training centres which already exist in any area, will be strengthened and developed, and new ones established to meet the requirements of the project area.

Health

10. The Health Organisation of the Project area will consist of 3 primary health units in the Development Blocks and a secondary health unit equipped with a hospital and a mobile dispensary at the headquarters of the Project area and serving the area as a whole. It would aim at the improvement of environmental hygiene, including provision and protection of water supply ; proper disposal of human and animal wastes ; control of epidemic diseases such as Malaria, Cholera, Small-pox, Tuberculosis, etc. Provision of medical aid along with appropriate preventive measures, and education of the population in hygienic living and in improved nutrition.

Supplementary employment

11. The unemployed and the under-employed persons in the village community will be provided with gainful employment to such extent as is possible, by the development of cottage and small-scale industries, construction of brick kilns and saw mills and encouragement of employment through participation in the tertiary sector of the economy.

Housing

12. Apart from the provision of housing for community projects personnel, steps will be taken, wherever possible, to provide demonstration and training in improved techniques and designs for rural housing. In congested villages, action in the direction of development of new sites, opening of village parks and playgrounds and assistance in the supply of building materials, may also be necessary.

Training

13. The training of village level workers, project supervisors and other personnel for the Community Development Programme will be carried out in 30 training centres which have been set up with the assistance of the Ford Foundation of America. Each training centre will have facilities for about 70 trainees. Each centre will have double training staff so that the trainees can be divided into two groups. One group will be getting practical and supervisory work experience, while the other group will be utilising the centres' facilities for lectures, demonstrations and discussions. In view of the great demand on the training centres to turn out people quickly for the opening of new projects, the training period will, in the first instance, be limited to six months.

In addition to the training of village level workers and supervisors, the agricultural extension service workers in the Project areas will take steps for the training of the agriculturists, panches and village leaders.

Social welfare

14. There will be provision for audio-visual aid for instruction and recreation, for organisations of community entertainment, sports activities and Melas.

Organisation

15. *Centre*—For the implementation of the Community Development Programme as indicated above, the Central Organisation will consist of a Central Committee (the Planning Commission has been designated as the Central Committee) to lay down the broad policies and provide general supervision, and an Administrator of Community Projects under the Central Committee. The Administrator will be responsible for planning, directing and co-ordinating the Community Projects throughout India under the general supervision of the Central Committee and in consultation with appropriate authorities in the various States. He will be assisted by a highly qualified executive staff to advise him on administration, finance, personnel, community planning and other matters.

16. *State*—At the State level, there will be a State Development Committee or a similar body consisting of the Chief Minister and such other Ministers as he may consider necessary. There will also be a State Development Commissioner or a similar official who will act as the Secretary to the State Development Committee and will be responsible for directing community projects in the State. Where the work justifies it, there may, in addition, be a Deputy Development Commissioner specifically in charge of community projects.

17. *District*—At the District level, there will be, wherever necessary, a District Development Officer responsible for the Community Development Programme in the district. This officer will have the status of an Additional Collector and will operate under the directions of the Development Commissioner. He will be advised by a District Development Board consisting of the officers of the various departments concerned with Community Development, with the Collector as Chairman and the District Development Officer as executive Secretary.

18. *Project*—At the Project level, each individual project unit (consisting of a full project or one or more Development Blocks where there is not a full project) will be in charge of a Project Executive Officer. In the selection of Project Executive Officers, special regard will be paid to experience, general outlook, understanding of the needs and methods of Community Development, capacity for leadership and ability to secure both official and non-official co-operation. Each Project Executive Officer in charge of a full project, will have on his staff approximately 125 supervisors and village level workers, who will be responsible for the successful operation of all activities at the Project Level.

This organisational pattern will be adapted to suit local conditions and needs as may be deemed necessary by the Administrator and the respective State Governments.

People's participation—the crux of the programme

19. While on the subject of organisation, it is necessary to stress the importance of ensuring, right from the start, the people's participation, not merely in the execution of the Community Development Project but also in its planning. This in fact is the very essence of the programme.

20. The Community Development Programme aims at the establishment of a suitable organ to ensure participation of the villagers at the planning stage. It contains provisions for the setting up of a Project Advisory Committee. It is intended that the Project Advisory Committee should be as representative as possible of all the non-official elements within the project area.

In securing participation of the villagers in the execution of the programme, the Community Projects Organisation will avail of all non-official local voluntary organisations and especially the Bharat Sevak Samaj, which is likely to be set up in the project area on the lines indicated in the pamphlet recently circulated by the Planning Commission.

Villager's contribution to the programme

21. The pattern of the project as drawn up includes major items of works normally implemented through Government agencies. This is bound to involve higher expenditure through elaborate administrative staff, middlemen's fees and possibly in certain cases, questionable practices. If the people are to be trained to be the builders of the future, the works have to be entrusted, even at certain risks, to the people themselves through their representative agencies, the Governmental organisation furnishing the technical assistance and the essential finance. It is intended that a qualifying scale of voluntary contribution, either in the form of money or of labour, should be laid down and this contribution will be a condition precedent to development schemes being undertaken under the Community Development Programme.

In all these cases, contributions may be in the form, either of voluntary labour or of cash. In respect of backward areas and areas predominantly populated by scheduled castes and scheduled tribes it may not be possible for the villagers to make any financial contribution. In these areas, the villagers should be asked to contribute by way of labour effort required for executing the works programme under various heads. The agency of the Bharat Sevak Samaj is hoped to become a major avenue for the organisation of the voluntary effort on the part of the villagers.

Finance

22. The estimated expenditure on a basic type of a rural community project, *i.e.*, a project without the provision for an urban unit, is Rs. 65 lakhs over a period of 3 years. Of this amount, about 58·47 lakhs will be rupee expenditure, and Rs. 6·53 lakhs will be dollar expenditure.

The estimated cost of an urban unit (which it is intended to provide in a few projects) is Rs. 111 lakhs. Of this amount, the estimated rupee expenditure is about Rs. 95·55 lakhs and the dollar expenditure is Rs. 15·45 lakhs.

In order to enable expansion of the programme in future years, the Central Committee felt that some reduction in the estimated cost of a rural community project, basic type, should be made and, after examination of the question, has now decided that all community projects

should be operated on the basis of a reduced total of Rs. 45 lakhs per project. So far as the existing projects are concerned, this would mean that the area of operations under each project on a population basis of 2 lakhs per project should be so revised or adjusted as to conform to the new expenditure pattern.

The Community Development Programme imposes financial obligations on the Centre as well as on the State Governments. Broadly, the proportions which have been fixed are 75 per cent for the Centre and 25 per cent for the State in respect of non-recurring expenditure, and 50 per cent each for Centre and States in respect of recurring expenditure. This applies to ' grants-in-aid '. Loan amount is totally found by the Centre. After the three-year period, the Community Project areas are intended to become Development Blocks on the lines recommended for adoption in Chapter VI of the Grow More Food Enquiry Committee's Report. It is expected that in so far as the Community Project areas are concerned, the expenses of such development blocks will be borne entirely by State Governments after the third year. The expenditure, mostly recurring, is likely to be about Rs. 3 lakhs per project.

Supporting projects

23. The Community Development Programme is related to and supported in part by most of the other projects under the Indo-American Technical Cooperation Programme. The fertiliser required by the Community Development Programmes will be acquired and distributed in accordance with the Operational Agreement No. 1 which deals with the " Project for Acquisition and Distribution of Fertilizer ". Similarly, the iron and steel needed for farm implements and tools will be acquired and distributed in accordance with the " Project for the Acquisition and Distribution of Iron and Steel for Agricultural purposes ". The tubewells to be constructed in the project areas will be allocated from the " Project for Ground Water Irrigation ". Information and services with respect to soils and fertilizer application will be made available from the " Project for distribution of soil fertility and fertiliser use ". Assistance in Malaria control in the project areas will be forthcoming from the " Project for malaria control planned under the Technical Cooperation Programme ". The training of Village Level Workers and Project Supervisors will be carried out under the " Village Workers Training Programme "

Evaluation

24. A systematic evaluation of the methods and results of the Community Development Programme will, no doubt, make a significant contribution by pointing up those methods which are proving effective, and those which are not ; and furnishing an insight into the impact of the Community Development Programme upon the economy and culture of India. In order that it may be useful to those administering the Community Development Projects and serve as a basis for informed public opinion regarding the programme, the evaluation work is being arranged to be conducted by the Planning Commission in close cooperation with the Ford Foundation and the Technical Cooperation Administration.

III—National Extension Service

In setting out our proposals on the subject of administration of district development programmes, we have already attempted to analyse the organisational features of extension work in the district. The entire subject has been carefully reviewed recently by the Grow More Food Enquiry Committee. After examining the results of the campaign for increased food production, which has been in progress for several years, the Committee state the problem which extension workers have to meet in the following words :

"No plan can have any chance of success unless the millions of small farmers in the country accept its objective, share in its making, regard it as their own, and are prepared to make the sacrifices necessary for implementing it. The integrated production programme has failed to arouse enthusiasm for the reasons we have given. The food problem is a much wider one than mere elimination of food imports. It is the problem of bringing about such a large expansion of agricultural production as will assure to an increasing population progressively rising levels of nutrition. In other words, the campaign for food production should be conceived as part of a plan for the most efficient use of land resources by the application of modern scientific research and the evolution of a diversified economy. In its turn, agricultural improvement is an integral part of the much wider problem of raising the level of rural life. The economic aspects of village life cannot be detached from the broader social aspects ; and agricultural improvement is inextricably linked up with a whole set of social problems. The lesson to be derived from the working of the G. M. F. programmes thus confirms the experience of States and private agencies engaged in village development. It is that all aspects of rural life are interrelated and that no lasting results can be achieved if individual aspects of it are dealt with in isolation. This does not mean that particular problems should not be given prominence but the plans for them should form parts of, and be integrated with, those for achieving the wider aims. It is only by placing this ideal—of bringing about an appreciable improvement in the standards of rural life and making it fuller and richer—before the country and ensuring that the energies of the entire administrative machinery of the States and the best nonofficial leadership are directed to plans for its realisation that we can awaken mass enthusiasm and enlist the active interest and support of the millions of families living in the countryside in the immense task of bettering their own condition."

2. This analysis led to the Committee to propose the establishment of a national extension organisation for intensive rural work which could reach every farmer and assist in the coordinated development of rural life as a whole. The detailed proposals of the Committee on the organisation of the extension network at various levels have been described earlier. The programme envisaged by the Committee, for which the necessary provision has been made in the Plan, is that the Central Government should assist State Governments in establishing extension organisations so as to bring their entire area under extensive development within a period of about ten years. During the period of the Plan, about 120,000 villages are to be brought within the operations of the extension, that is, nearly one-fourth of the rural population. The Central and the various State Governments are expected in the near future to frame detailed programmes for reorganising the existing extension services, arranging for further recruitment and preparing training programmes.

In drawing up these programmes the Central and State Governments will have to examine the necessity for providing the basic training in agriculture and animal husbandry to the village level workers and the various supervisory subject matter specialists. Where existing facilities are inadequate, steps will have to be taken to augment them with a view to ensuring an adequate supply of extension workers for each major linguistic region. There is little doubt that the implementation of these proposals can give a new and powerful momentum to all rural work and, in particular, to the programme for increaeds agricultural production.

3. The organisation of extension services with the object of securing increased production and raising the standard of village life is a new undertaking. Extension is a continuous process designed to make the rural people aware of their problems, and indicating to them ways and means by which they can solve them. It thus involves not only education of the rural people in determining their problems and the methods of solving them, but also inspiring them towards positive action in doing so. It is, therefore, of the highest importance that for this task, personnel of the right type should be obtained who will take to their work with zeal and enthusiasm. The qualities required are not only the ability to acquire knowledge but also dedication to the task of serving the rural people and the development of a will to find solutions for their problems. People from village surroundings with experience of practical farming are likely to prove of special value as extension workers.

4. The training of extension workers requires the closest attention and must be related to the serivces that they will have to perform. They have to understand rural problems, the psychology of the farmer, and offer solutions to his various difficulties. They have to try and find out the felt needs of the people, and the solutions that they offer must be demonstrated by acting in close cooperation with the farmers. They should be able to discover leadership and stimulate it to action. Their success will depend on the extent to which they gain the confidence of the farmers. Their duties have thus to be educative and demonstrative. Their training will thus have many facets. Periods spent in gaining a thorough training will be a good investment. If the period of extension training is to be shortened, so as to be able to cover a larger area than may be otherwise possible, care should be taken to see that it is preceded by adequate opportunities for basic training in all aspects of rural development. Their conditions of service should also be such as are calculated to keep up their zeal and enthusiasm and ensure the continuous maintenance of high standards of performance. There should be considerable scope for promotion for men who start at the bottom. In order to develop the true extension approach much might be gained if all extension workers, whether graduates or field level workers, were to start at the field level and only those who proved their worth, received promotions to higher positions. A fair proportion of these positions should also be open to village workers who display the necessary qualities of leadership and ability. For this purpose, courses should be provided at different levels to enable the promising extension workers who start at the field level to reach positions of greater responsibility.

5. It is important to secure that the extension service retains its character of continued utility to the rural areas which they serve. This factor should, therefore, be particularly borne in mind in judging the work of officials who man this service. Local opinion on the extent to which an extension worker has made himself useful should be an important criterion in assessing his ability.

6. The confidence of the villager is gained with difficulty and lost easily. It is, therefore, of the essence of extension that the initial start is made with items whose usefulness to the cultivator in increasing agricultural production has been well established. It is only after sufficient confidence is gained that comparatively untried measures can be put forward, and even these should be held out as experiments until the people have found the answer for themselves.

7. The immediate effect of the first impact of an extension organisation is to increase the demands of the cultivator for credit, supplies and implements. The satisfaction of these demands is a necessary consequence of extension activities and they will succeed to the extent this responsibility is handled efficiently. Extension activities will be adversely affected if arrangements cannot be made for supplying the needs which they generate.

8. Finally, it may be pointed out that extension workers have to be supported effectively by research workers to whom they can bring their problems and whose results they carry to the people. Special arrangements are, therefore, needed to ensure the closest cooperation between extension and research.

CHAPTER XVI

FINANCE FOR AGRICULTURE

Agricultural production in this country depends upon millions of small farmers. It is the intensity of their effort and the efficiency of their technique that will help in raising yields per acre. Because of inadequate financial resources and absence of timely credit facilities at reasonable rates, many of the farmers, even though otherwise willing, are unable to go in for improved seeds and manures or to introduce better methods or techniques. Works of minor irrigation like wells owned by the cultivators either get into disuse or are not fully utilised for want of capital. The major object of the agricultural programme discussed earlier is to develop local resources of seeds, manures and irrigation and to provide other accessories of production. To utilise man-power and cattle resources more fully than is done at present, these aids to better and more intensive farming are essential. It is, therefore, of the utmost importance that the financial requirements of the producers for these purposes should be adequately met. The achievement of targets in the agricultural sector which covers production of food and essential raw material like cotton, jute and oilseeds, ought not to be allowed to suffer for want of adequate credit facilities. Provision of sufficient and timely credit at fair rates of interest has, therefore, to be considered as an integral part of the Plan. Assistance rendered by way of credit has, however, to be related to specific items of productive work or of essential costs of cultivation. For providing these facilities all the existing agencies *e.g.* money lenders, commercial banks, co-operatives and the State have to be integrated and harnessed to a common purpose. Such a comprehensive approach is essential for ensuring the best use of all the available resources of the nation.

Nature of Requirements and Agencies of Agricultural Credit

2. Finance required for production can be divided broadly into : (*a*) short-term (for periods up to 15 months) ; (*b*) medium-term (from 15 months up to 5 years) and (*c*) long-term (above 5 years). Short-term loans are required for purchasing seeds, manures and fertilizers or for meeting labour charges, etc. These are expected to be repaid after the harvest. Medium-term loans are granted for purposes such as sinking of wells, purchase of bullocks, pumping plants and other improved implements, etc. Loans repayable over a longer period (*i.e.* above 5 years) are classified as long-term loans. These are utilised for payment of old debts, purchase of the heavier machines, making permanent improvements and increasing the size of the holding. A quantitative assessment of the finance required under these three categories is extremely difficult as adequate data for the purpose are not available. It is hoped that the rural credit survey undertaken by the Reserve Bank will provide more reliable estimates on the basis of which policy can be formulated. It is, however, clear that there is a wide gap between funds at present available on reasonable terms and the requirements of the cultivators.

3. The following agencies provide finance to the cultivators :—

(1) Private agencies : (*a*) money lenders and landlords ; (*b*) commercial banks.

(2) Public or semi-public agencies : (*a*) the State ; (*b*) co-operative societies.

Until recently, at any rate, the money lenders and the landlords were the principal sources of rural credit. It is generally believed that the recent debt relief legislation, the system of licensing money lenders and restrictions on the use and transfer of land as security have led to a considerable decline in their operations. The abolition of all privileged tenures and the impending reforms both in zamindari and ryotwari areas have discouraged investment by the landlords and larger cultivators. No estimates are available regarding the extent to which the money lenders and landlords have been affected by these considerations or of the extent of the role that they now play as providers of credit. The findings of the rural credit survey may throw more light on this important aspect of the matter and provide the basis for further thought and action. In the meantime, however, it is necessary to build up and expand the system of Government or co-operative credit so that the implementation of the Plan may proceed according to schedule.

STATE LOANS

4. As the finance provided from private sources was not adequate, the assistance rendered by the State in the form of taccavi loans had to be increased considerably during the last few years. The amount of taccavi loans sanctioned in 1949-50 was about Rs. 15 crores as against Rs. 1 crore in 1938-39. The State which formerly gave loans mostly for relieving distress or meeting the needs of a few indigent cultivators has now assumed increased responsibility for development finance especially as a result of the Grow More Food campaign. It is a matter of common complaint that the actual disbursement of these loans involves considerable delay and that the procedure connected with it causes considerable inconvenience to the cultivators. Our proposals regarding appropriate use of taccavi loans are discussed at a later stage in this chapter.

LOANS BY CO-OPERATIVE SOCIETIES

5. Besides State loans, a significant share of the finance for agriculture is provided by co-operative societies. There were 1,42,394 agricultural societies which advanced Rs. 28·53 crores in 1949-50 as against Rs. 6·75 crores advanced by 1,05,301 agricultural societies in the year 1938-39. Nearly two thirds of the total loans made by agricultural credit societies were granted in the two States of Bombay and Madras while 22 per cent of the funds were utilised by the societies in U. P., Madhya Pradesh and the Punjab. The credit movement in other areas has yet to be developed. Long-term loans extending upto a period of 20 years are provided by the 283 Land Mortgage Banks which advanced a sum of Rs. 1 crore during the year 1949-50. A major part of the long term loans was taken up again by Madras and Bombay where the movement has progressed fairly well. Punjab and West Bengal have not yet recovered from the unsettling effects of partition. In many of the Part 'C' and the newly integrated Part 'B' States, co-operative structure at the Apex and district levels has yet to be

created. Reorganisation and adjustment are also necessary in other areas. The progress and achievements of the movement in Bombay, Madras and the other co-operatively advanced States prove that co-operatives are the most effective agency for providing finance for agricultural purposes. A co-operative society organised by the people for their economic and social welfare places proper emphasis on the character of a member without losing sight of his material security. Compared to State agency a co-operative can exercise better supervision and it can ensure utilisation of loans for productive purposes more effectively. Recovery of loans is also facilitated as, besides coercive action, public opinion is also brought to bear against wilful defaulters. Co-operatives are also in a better position to mobilise local savings. It would, therefore, be advantageous to distribute even the State loans for development purposes through the co-operative societies. We recommend this policy.

6. As the major portion of the funds that they advance are derived by way of shares, deposits or loans, co-operative societies like other credit agencies have to operate on recognised banking principles. To avoid a serious risk of losses they have to deal generally with credit-worthy farmers. In addition to these, there are a large number of potentially credit-worthy cultivators in the rural areas who are just on the margin. Facilities granted to them either in regard to the terms of repayment or the rates of interest would go a long way to improve their productive capacity. It is considered desirable that the co-operatives should handle the credit business of this class also, as a separate agency for them would not only be expensive but would also lead to an undesirable duplication because in practice, it is difficult to distinguish between the credit-worthy and potentially credit-worthy people. Dealing with the latter class, however, involves more risk than that normally covered by the societies. To the extent that the co-operatives incur losses on account of the additional risk they may have to be compensated. The same procedure can be adopted for providing finance in less developed areas. The uneconomic cultivators should not be denied the benefits of the movement. In fact, it is difficult to maintain a distinction between economic and uneconomic cultivators as in the strict economic sense, most of the Indian farmers would be classified only as potentially credit-worthy or uneconomic cultivators. Many of them receive and repay loans from the societies, and will have to continue to do so. In their case character will be a very important factor in determining their eligibility for loans and the State will have to share a major part of the risk involved in this work.

7. To take up the functions visualised above the co-operative credit structure has to be strengthened at various levels in each State. The manner in which this can be brought about depends upon the conditions prevalent as well as the needs of the State. The Co-operative Planning Committee (1946) recommended that 50 per cent of the villages and 30 per cent of the rural population should be brought in the ambit of primary societies within ten years. The programme for a national extension service discussed earlier also contemplates organisation of multi-purpose societies in every village or a group thereof and efforts should be made to reach by 1955-56 the target set by the Cooperative Planning Committee. However, a slower rate of progress would be preferable to hasty expansion.

8. The success of the programme outlined above as well as the management of the cooperatives largly depend upon personnel. The absence of adequate trained staff is at present a serious limiting factor in the growth of the movement. The necessity of proper training for all grades of administrative, managerial and field staff in the Co-operative Department and co-operative institutions is being increasingly realised. The Reserve Bank has recently organised a special course of training for higher and intermediate personnel at the Cooperative College at Poona, which is conducted by the Bombay Provincial Co-operative Institute. A single institution, however, will not meet the needs of the country and similar facilities should be provided in other areas. We consider that there is scope for starting at least three more regional colleges almost immediately. Training for the subordinate personnel has also to be arranged simultaneously. We accord a high priority to the training programme and we have provided a sum of Rs. 10 lakhs in the Plan to subsidise a part of the expenditure. If the expenditure is to be put to good use, co-operative departments and institutions must increasingly appreciate the importance of employing trained staff and of deputing their employees for training.

9. Reorganisation and expansion of the movement in this manner for effectively carrying out the production programme will call for large scale investment. The co-operatives will have to initiate a drive for tapping local resources and for inculcating the habit of thrift in the local people. As the response to the savings campaign is, however, likely to be slow, finding adequate finance for the legitimate needs of their members may well prove to be beyond the resources of the co-operatives. Though ultimately the societies will have to build up adequate funds of their own, in the first instance they will need considerable financial and technical assistance from the Reserve Bank. The Bank has already taken a long step in this direction. Under the scheme of concessional finance it provides accommodation to the State Co-operative Banks for seasonal agricultural operations and marketing of crops at 1½ per cent (*i.e.* 2 per cent below the current Bank rate). The period of re-payment has been extended by an amendment of the Reserve Bank of India Act from nine months to a maximum of 15 months. Several other facilities are also now offered by the Reserve Bank by liberalisation of the procedure for grant of advances.

10. As a result of this liberal attitude of the Reserve Bank its advances to the Apex Cooperative Banks have increased from Rs. 1.5 lakhs in 1946-47 to Rs. 12.51 crores in 1951-52. At present these facilities have been availed of mostly by the developed Apex banks of two States, *viz.*, Madras and Bombay. The Reserve Bank is taking an active interest in re-organising the co-operative movement in all States, especially the undeveloped States, on a sound footing. It has completed a study of the movement in practically all the States. In the light of these studies the Reserve Bank should be in a position to suggest measures of improvement for adoption by the States concerned.

11. The Bank provides short term accommodation to the co-operative societies through the State Apex institutions which, in turn, make it available to the District Banks. The Apex Banks exist in the Part 'A' and a few important Part 'B' States, but some of them are not yet fully equipped to take up the increased responsibilities involved in borrowing from the Reserve

Bank. In many of the Part 'B' and 'C' States the Apex agencies have still to be created. The Reserve Bank has devoted attention to this task as well. The problems involved in expanding the movement are : (*a*) Securing trained personnel, and (*b*) finding adequate capital. As regards the capital it is likely that the funds necessary for organising or strengthening the Apex Banks may not be forthcoming in adequate measure from the local people or co-operative societies. State Governments which have an interest in creating these institutions and fostering their growth should subscribe a part of their capital and should be represented on their boards of management. The Apex agencies established in this manner would have greater stability and would give better results, even though such participation by the State would be a departure from the pattern hitherto favoured by most co-operators. While this effort to overcome the shortage of finance is underway, the State Governments may, if necessary, guarantee re-payment of the amount advanced by the Reserve Bank to the Apex Bank. This practice has already been adopted in a few cases. This must, however, be a temporary expedient and the movement should be able in the near future to secure its requirements on the basis of its own resources and the credit-worthiness of its constituents.

12. The essential characteristics of short term finance should be cheapness, elasticity and promptness. The concessional rate at which the Reserve Bank grants loans helps to reduce the interest rates charged to members. The characteristics of promptness and elasticity have remained comparatively neglected as the time lag and the rigidity of procedure associated with the whole mechanism of co-operative credit detract from the usefulness of the loans.

13. As the measures indicated above succeed in placing the credit structure in the States on a sound footing, the Reserve Bank and the Government should be able to provide even larger assistance. We are in agreement with the Grow More Food Enquiry Committee that in the next four years the advances to the cultivators through the institutional agencies should be steadily increased so as to reach the limit of at least Rs. 100 crores per annum by the fourth year. For achieving this and the other targets outlined later, it is necessary that a detailed plan of agricultural finance and co-operative development should be worked out by every State in consultation with the leaders of the movement, the Reserve Bank and the Central Government. The State plan will have to be broken down by districts keeping in view the main objective of the Plan in regard to its production targets and the relative priorities of its several parts.

Medium and Long Term Loans

14. While short term loans meet the immediate and pressing needs of cultivation, medium term loans enable the farmer to raise the standard of his tillage and to bring about an improvement in yields. Much greater emphasis, has, therefore, to be placed on medium term loans than has been done hitherto and adequate accommodation should be provided for them. Precise estimates of the amount of such loans advanced by co-operative societies are not available. It is, however, known that the bulk of their advances are repayable soon after the harvest. This pre-occupation of the societies with short term loans is due firstly to their greater urgency and secondly to the very limited availability of funds (by way of long term deposits, etc.)

which they can safely invest for a medium term, say upto five years. The comparative inability of the co-operatives to meet this demand of the cultivator deters many a credit-worthy person from seeking even short term loans as in this process he gets indebted to more than one creditor. The co-operatives will not, therefore, be really effective agencies for credit unless they are in a position to grant these so called medium term loans which are essential to large production. Medium term loans of the societies do not qualify at present for assistance from the Reserve Bank. Many leading co-operators feel that the Bank ought to be empowered to make medium term advance as well. We understand that the proposal has been accepted by the Reserve Bank, which has agreed to make such advances upto a limit of Rs. 5 crores. To enable the Bank to take up this work, amendment of the Reserve Bank Act is necessary. A Bill incorporating these and other changes has been placed before Parliament.

15. Medium term finance upto Rs. 5 crores provided by the Reserve Bank under the proposed arrangement will help the co-operatives in building up their business on a sounder and a more productive footing. Larger assistance from the Reserve Bank for short term loans will also release some of the medium term funds of the movement where they are at present utilised for crop loans. To the extent that this occurs, the amount available for agricultural improvement will increase. However, in view of the fact that there is great demand as well as scope for productive investment in this sphere and also in view of the fact that the co-operative structure is being created and extended in areas in which cooperation has so far been less developed, it is to be expected that the sum of Rs. 5 crores to which the Reserve Bank has limited medium term finance will prove inadequate. It is essential that this limit should not be allowed to hamper the normal pace of production. We, therefore, recommend that a provision of Rs. 5 crores spread over the next three years should be made in the Plan to supplement the resources of cooperative banks or other credit agencies created as an interim arrangement. These resources will, of course, include the intermediate finance which the Reserve Bank will be able to supply after its statute has been amended. Taking into account this additional provision, the accommodation likely to be available from the Reserve Bank and the funds that may be found within the movement, we consider that the target for medium term finance, Government and co-operative, at the end of the present Plan might be placed at Rs. 25 crores per annum.

16. As regards long term loans, the responsibility for financing improvements of a long term character, which benefit the community or a group of villages, will increasingly devolve on the State and the need for individual loans may diminish to some extent. However, this can be only a gradual process and assistance to individuals or a group for schemes of a permanent nature will continue to be an important item of production programmes. Consolidation of holdings and other schemes for improving the productivity of agriculture by increasing the size of the unit of cultivation are bound to widen the scope for long term loans. It is, therefore, necessary to have an organization which will assess these requirements and be in a position to satisfy them. This function can be best discharged by the land mortgage banks which possess long term funds raised by shares, debentures and fixed deposits. These banks exist in only a few States, *e.g.* Madras, Bombay, Mysore and Madhya Pradesh. The two main difficulties responsible for the slow progress of land mortgage banks are the lack of trained personnel

and the inability (legal) of the borrower to offer land as a security. As a result of recommendations made in this report elsewhere, these difficulties will soon be surmounted and we trust that as a part of the State Plan suggested in paragraph 12 of this chapter a long term agency will be created in more States. However, we do not deem it essential to have a separate land mortgage bank either at the State or district level in every case. Considering that the borrower and the security that he has to offer are generally the same for various types of loans, it has yet to be established that a separate agency for long term credit is invariably preferable to a single agency for different types of credit.

17. A major part of the advances made hitherto by the land mortgage banks are for repayment of old debts. The funds obtained either from the State or the community need in future to be utilised for purposes which will step up production and thus create a surplus of savings out of which the old debts may be discharged. The land mortgage banks should hence-forward lay greater emphasis on this developmental aspect and should give preference to applicants who want to increase their resources for enhanced production.

18. Another difficulty encountered by these Banks relates to finance which is often raised by floating debentures. Recently, some of the Central Land Mortgage Banks have found it somewhat difficult to raise long-term funds at sufficiently cheap rates of interest in spite of the fact that their debentures were guaranteed by the State Governments concerned and that the Reserve Bank, in accordance with its recent practice, subscribed 20% of the value in practically all these cases. There is therefore some apprehension that land mortgage banks, as a structure for long term credit, may languish for want of funds. This would hardly be in consonance with the objectives of the Plan. We have, therefore, made a provision of Rs. 5 crores spread over the next three years to supplement the long-term resources of the co-operative movement. We consider that the target for long term finance, Government and co-operative together should be Rs. five crores per annum at the end of the present Plan.

19. In regard to the principles which ought to govern the actual disbursement of the amount of Rs. 5 crores each which we have recommended to supplement the medium-term and long-term resources of the co-operative agricultural credit system, the following recommendations are made :—

(*i*) The loans made out of these amounts should in all cases be linked to the programme of increased agricultural production, and should therefore be subject to the same priorities as that programme.

(*ii*) Without prjudice to the above subject, the loans should be so distributed, with reference to regions and to classes of agriculturists, as to reach, by preference, areas and classes not served at present by the co-operative credit system.

(*iii*) In planning the distribution of credit among such areas and classes, forms of organization should, if possible, be devised (e.g. borrowers' groups in villages) which can be readily developed into, or eventually fitted in with, the co-operative type of organisation.

(*iv*) Where credit is disbursed in an area already served by the co-operative organization, the agency of that organization should be utilised as far as possible.

(*v*) The contribution to long-term agricultural finance may, among other things, take the form of Government purchasing part of the debentures issued by land mortgage banks.

(*vi*) In regard to the implementation of these recommendations, a detailed plan should be chalked out by the Government of India in consultation with the Reserve Bank and other organisations concerned.

20. Finally, in putting forward the proposals outlined in this chapter we envisage them as helping in the realisation of the targets in the Plan and as a part of and a first step to a comprehensive and integrated policy of agricultural credit to be evolved as early as possible on the basis of the factual material which is expected to be furnished by the rural credit survey. At this stage we would only suggest that in the wider solution of the problem the integration of financial agencies would have to extend to all organisations—co-operative, commercial and other which act as repositories and suppliers of credit.

The history of agricultural development in all advanced countries shows that such an integrated system of credit laid the foundation for agricultural development and prosperity. Whether there should be a single agency dispensing all types of credit, or a separate agency for long term or for long and medium term, what form this agency should take at the State level and whether the State agencies need to be integrated in a Central Agency at the All-India level, and what part the Agricultural Credit Department of the Reserve Bank should play in this organisation, are matters which will have to be considered in the context of the wider issues referred to above.

CHAPTER XVII

AGRICULTURAL MARKETING

1. The problems of agricultural finance discussed in the previous chapter relate to the pre-harvest requirements of the cultivators. The disposal of the produce after the harvest and the return obtained, therefore, also have a significant effect on production and on the welfare of the cultivator. Production in agriculture being seasonal, the crop is harvested during a short period and consumed gradually. While commodities like cotton and groundnut require large storage space which the average cultivator lacks, fruits, vegetables and sugarcane are of a perishable nature. The farmer has, therefore, to dispose of his surplus immediately either at the village or at the *mandi*. In the absence of staying power the large number of small farmers compete with each other and the markets witness conditions of occasional glut and scarcity. A major part of the commercial crops like cotton, jute, sugarcane and oilseeds has to be marketed immediately as the farmers are in need of cash for meeting their dues and other expenses. As regards foodgrains the marketable surplus varies by crops and regions but may be placed at about 20 to 30 per cent under normal conditions. The total quantity and value of the marketed produce, even in a predominantly subsistence economy as in India is considerable.

2. Sale of agricultural produce involves a number of functions such as assembling, storing, grading, standardising, transporting and financing the produce and negotiating sale. Some of these operations may be performed by the farmer, but storage and sale of a commodity and finding finance for purchase, call for specialised knowledge and adequate resources which the individual cultivator does not possess. Those who render these services, therefore, perform a useful function for which a reasonable return is due.

3. The village money lender or the *mandi arhatiya* advances loans to farmers for securing production requirements like seeds, and manures and for meeting other needs. These debts some times carry an understanding or an obligation to sell the produce to or through the lender or his nominee. At the time of sale the position of advantage occupied by the village banker gets reflected either in a lower price or unfair weights or delayed settlement. If the sale takes place in the *mandi* or the market through the brokers or *arhatiyas* the farmer pays not only for the services rendered by the middlemen but is also subjected to other unwarranted deductions.

4. To remove the disabilities of the farmers in the *mandi*, regulated markets have been established in the States of Bombay, Madras, Punjab, Hyderabad, Mysore, Pepsu and Madhya Pradesh. Unauthorised deductions are prohibited and the charges of brokers and weighmen regulated. In some of these places the system of open auction or sales has been introduced. These improvements have benefited the cultivator to a certain extent. Regulated markets, however, do not exist in the States of Uttar Pradesh, West Bengal, Bihar, Orissa, etc. Some

of the States which have adopted the Agricultural Produce Markets Acts have a large number of markets which still continue to be unregulated. It is necessary to extend the operation of the Act so as to cover all the important markets in each State by 1955-56, as this is the first step in improving marketing facilities.

5. The management of regulated markets vests in committees on which growers are also represented. Their voice is, however, seldom effective. Many of the marketing committees are not yet fully conscious of their responsibility of utilising their funds for developing marketing facilities. The Madhya Pradesh Government have, therefore, amended the Cotton and Agricultural Produce Markets Act with a view to entrusting the management of regulated markets to the Cooperative Societies and the Cotton Market at Amravati has been handed over to the local marketing co-operative.

Progress of Co-operative Marketing

6. The benefits of a regulated market which attempt only to improve the existing practices are limited ; without changing the marketing structure the number of middlemen and costs cannot be reduced. Efforts in this direction have been made in some States by organising cooperative marketing. For example, 1,600 cane cooperative unions and other primary societies have been organised in Uttar Pradesh in the last 10 years. They handle 85 to 90 per cent of the total cane supplied to sugar factories. The average value (3 years ending 1951-52) of about 50 lakhs tons of cane annually sold by the societies amounted to more than Rs. 25 crores. This has been achieved under the Sugar Factories Control Act which requires every member of the society in the zone to deliver a specified quantity of cane through the cooperative society for which minimum prices are paid by the factory. The cooperatives are paid a commission of about Rs. 1/4/- per ton for their services by the sugar factories. This is taken into account while calculating the sale price of sugar. Besides arranging the sale, these cooperatives are making an attempt to link up credit with marketing. They supply seeds, manures, fertilizers and other requirements. The unions also carry on rural welfare activities.

7. Cooperative marketing of cotton has been attempted in Bombay where 84 cotton sale societies functioned in 1948-49. While the societies in Karnatak arrange the sales of the produce of their members in individual lots, the Gujerat cotton growers pool cotton of a similar variety for purposes of sale. The cooperatives own 11 ginning and pressing factories in the State. The producer-*cum*-consumer societies in Madras which have been converted into marketing societies and a few others in other States are also making efforts in this direction. Some of them have taken up procurement work for the Government. Provincial marketing societies which have been established in 9 States to assist the primary units registered only a small volume of business which amounted to Rs. 1·15 crores in 1949-50.

8. The progress of marketing societies, in spite of immense scope, has so far been slow. The entry of a co-operative even as an agent is not generally favoured by the trade. For instance, it refused to buy cotton offered by the cotton sale society in Karnatak and boycotted its sales.

The buyers also make payment after a time lag and the cooperatives acting as agents are required either to raise a larger amount of finance to meet their commitments or to keep the amounts outstanding. The U. P. sugar factories, for example, were in arrears to the extent of about Rs. 2 crores, to the societies by the end of the year 1950. Some of the cooperatives had to engage contractors for finding finance and making payments. The performance of the contractors was unsatisfactory and their charges were heavy. To overcome such difficulties the Gujerat Cotton Sales Society established a ginning factory. This facilitated the sales and the ginning charges were reduced by 50 per cent. The Society however, did not own the pressing factory and utilized a plant belonging to the traders. After sometime the press owners raised their charges by more than 75% and declined to undertake the pressing work on behalf of the Society. The society was, therefore, compelled to erect its own press. The cane growers of Ahmednagar District in Bombay State who had suffered for the last 30 years from violent fluctuations in prices of gur they produced, have recently set up a Cooperative Sugar Mill which has not only ensured them better prices and timely payment but has also helped them in improving the efficiency of production through the supply of manures, fertilizers and seeds. The society tries to work with each farmer on his problems and provides long term credit for development . The loyalty and the support of the members, the enlightened leadership, financial aid in the shape of share capital—Rs. 6 lakhs from the Bombay Government and a loan of Rs. 20 lakhs from the Industrial Finance Corporation are some of the important factors which have led to the success of the scheme.

9. It would thus appear that even after the linking of credit with marketing, cooperatives, which act only as commission agents for sale, (as in Uttar Pradesh) are not effective and that ownership and management of processing facilities on a cooperative basis are essential for protecting the interests of the growers and strengthening the economy. The benefits of efficiency and economy in the processing activities are considerable, and if they are transmitted to cultivators, there will be an incentive for increasing production. A co-operative which functions in this manner can also assist in crop planning by introducing improved varieties of seeds, by giving the necessary technical advice to cultivators and by financial help wherever necessary.

10. There are, however, some commodities which are marketed without elaborate processing. In such cases the marketing cooperative will have to establish direct dealings with the consumer cooperatives. In Canada, the Grain Growers' Cooperative Company in Winnipeg having been boycotted by the Canadian traders, had to negotiate sales of wheat with the Scotish Cooperative Whole-sale. In this country there exists a considerable volume of inter and intra State trade in wheat, pulses, fruits, vegetables, etc. By contacting its counter-parts in other States the provincial marketing association should work out an arrangement for imports and exports. Similar arrangements within the State could also be made.

11. Some of the marketing societies appear to have been organised without adequate share capital. The Madras Provincial Marketing Society, for instance, has a share capital of about Rs. 50,000 while Orissa and West Bengal Apex Marketing Societies are functioning with a share

capital of about Rs. 13,000 and Rs. 5,000 respectively. The credit limit assessed by and assistance available from the State Apex credit agency and the Reserve Bank for financing marketing operations depend upon the capital structure and owned resources of the society and the volume of its business is largely regulated thereby. It is, therefore, necessary that marketing associations especially those which are meant to be apex agencies should obtain sufficient capital from their constituents.

12. Marketing requires technical skill and specialised knowledge. Associations operating in a group of villages or in a commodity do not have the volume or turnover to warrant employment of trained or qualified personnel. The area of operation of a marketing society should, therefore, be fairly large, say a Tehsil. Further, separate societies for individual commodities should be restricted only to such staples of trade as have a specialized wholesale market.

STORAGE AND WAREHOUSING

13. Another difficulty that the societies encounter relates to storage facilities. Most of the surplus produce in an area is assembled and sold at the *mandi* or market which is generally at the rail or motor head and possesses road transport and banking facilities. On the strength of the goods pledged the banks finance the marketing operations. Release of goods and their despatch either on consignment or sale can be arranged more quickly from the godowns at the *mandi* than from those located in the rural areas. It would, therefore, be an advantage to develop storage facilities at *mandi* centres. Some godowns space-temporary, semi-temporary or permanent—are available in every *mandi*. This accommodation is often unsatisfactory as it fails to provide adequate protection to goods from damage and deterioration by moisture, rodents, insects, pests, etc. Moreover, even for getting such space, fairly high rent has to be paid. It would, therefore, be better if the cooperatives plan to have their own storage facilities. Some State Governments, particularly Madras, Bombay, and Orissa are alive to this problem and are rendering assistance by providing loans and subsidies for the construction of godowns. Other States, we suggest, may follow this practice.

14. Several committees and commissions including the Royal Commission on Agriculture, the Central Banking Enquiry Committee, the Marketing Sub-Committee, the Agricultural Finance Sub-Committee, the Cooperative Planning Committee and the Rural Banking Enquiry Committee have emphasised the need to promote warehousing in the country and have also made various suggestions in this connection. In the absence of warehouse receipts which could serve as collateral for the promissory notes of the borrowing banks, it has not been possible for the Reserve Bank to extend assistance to the cooperative and scheduled banks under section 17 of the Reserve Bank Act for financing marketing operations. The Reserve Bank, therefore, suggested establishment of Licensed warehouses. The States of Bombay, Madras, Madhya Pradesh, Mysore, Hyderabad and Travancore-Cochin have already enacted the necessary legislation. We recommend that similar action should be taken by other State Governments as well. Even though the Warehousing Act has been passed in some States more than four years ago, licensed warehouses have not been established so far. This is largely due to the

fact that the law, being an enabling piece of legislation, leaves it to the trade, private investors, limited companies or the cooperatives to set up the warehouses. The investors generally hesitate to take up a new venture in which they have little experience. Further, the law provides not only for regulation and inspection of the warehouses but also for fixing the charges at a reasonable level. Under the present conditions when the money market is tight and there are other more remunerative fields for investment it is doubtful if private capital would be attracted, particularly in producing areas. Progress will, therefore, depend mostly on the initiative of the cooperatives and their ability to secure the required long term capital. We therefore suggest that the State Governments and the Reserve Bank should assist warehousing development by measures such as provision of loans, etc. to organisations which are willing to undertake this work.

Future Pattern of Development

15. Cooperatives will be successful to the extent that they render efficient service to the growers at the minimum cost. This in turn depends upon their ability to undertake processing activities, command warehousing accommodation, and obtain sufficient financial resources and, above all, honest, capable and efficient management. Though some States have fostered the growth of marketing societies, a policy for their development has yet to be laid down or followed for the country as a whole. Cooperative marketing linked with production, finance and cooperative ownership of processing industries will be a useful instrument in increasing production, cutting costs and introducing a system of crop planning. Favourable conditions for their growth have, therefore, to be created without loss of time.

16. In this context we suggest that processing plants established hereafter should be owned and managed by cooperative societies, and licences and other forms of support given to them by the States. Where such societies do not exist active and timely steps should be taken to organise and to equip them. As regards cooperative management and ownership of the existing facilities the progress will depend upon the speed with which the necessary organisation can be created and personnel trained. Where the movement has developed well in other fields such as the States of Madras and Bombay—marketing societies may develop more rapidly as to them would be available the long standing and valuable experience of cooperative workers. Cooperatives in other States would also benefit thereby as they would be able to build societies after taking into account the result obtained in these States.

17. The technical, marketing, financial and administrative problems involved in these operations need expert study, guidance and supervision particularly in the initial stages. As every State may not be in a position to provide the experts and in some cases they may not have full-time work, it would be an advantage to have a standing committee of four experts on processing and marketing at the Centre. The Committee should assist the State Governments

and the cooperatives in drawing up detailed schemes after a careful examination. It would be their responsibility to review the progress of work of every unit in the State from time to time and make a comparative study of the factors which hinder the work. In the past many a marketing cooperative has foundered because the local manager and the Board are not able to foresee or tackle a problem on their own. While failures in private trade or industry often go unnoticed, mistakes or shortcomings of a cooperative attract a good deal of public attention and criticism because of their democratic character and economic and social significance. Hence the need for and importance of expert guidance. As regards long term finance required by the societies for purchasing machinery and other equipment we consider that it should be made available by the State and Central Industrial Finance Corporations.

18. As the cooperative gain a surer foothold in the commodity markets it should be possible to bring the management of regulated markets more and more under cooperative direction. Immediately, cooperatives should be given adequate representation on the managing committees of regulated markets. As the positive services made available to growers by these cooperatively directed market committees become more evident, the committees may be empowered to make a small charge on the produce handled by them for a further expansion of these services. In this manner it would be possible for each market to build up funds of its own. On their strength the cooperatives could obtain accommodation from the bank for financing their operations.

GRADING

19. The introduction of proper grades and standards is another matter in regard to which the State can usefully assist. Grading of farmers' produce before sale on the basis of well defined grades in a regulated market will help in the proper valuation of his produce which will enable him to claim a price commensurate with the quality offered, thus providing an incentive to improve its quality. Grade standards are also necessary as a basis for the issue of negotiable receipts by warehouses and economical development of public storage facilities. The poor quality of the agricultural produce has been an important handicap in export markets. Shipments of cashew nuts, black pepper, turmeric, wool, etc., fetch reduced prices and get condemned abroad as they contain foreign matter and are not of uniform quality. On the other hand, the introduction of grading on the basis of Agmark quality standards has yielded satisfactory results in respect of tobacco and sann hemp. To remove the handicaps experienced by other commodities and promote export trade, it is proposed to undertake grading of wool, bristles, lac, sheep and goat skins, cashew-nuts, vegetable oil seeds, oils and kopak, the export value of which was of the order of Rs. 110 crores annually during the 3 years immediately after partition. These commodities would be brought under compulsory grading in successive stages. The total estimated expenditure on the scheme would be Rs. 86·47

lakhs which amount would be recovered from the levy of charges under Section 3(f) of the Agricultural Produce (Grading and Marking) Act of 1937. The following statement shows the programme :—

Year	Scope of Plan	Developmental Expenditure (Rs. lakhs)
1951-52	Grading of tobacco and sann hemp	5·06
1952-53	Grading of wool, bristles and goat hair and lac	11·41
1953-54	Grading of sheep and goat skins	14·38
1954-55	Grading of cashewnuts, pepper, spices and lemongrass oil	22·62
1955-56	Grading of kapok, myrobalans and other forest produce (rosin, turpentine, etc.), vegetable oilseeds and oils	33·00
	TOTAL	86·47

It is estimated that as a result of grading the export value of these products would increase by about 10 per cent.

20. In the internal trade the question of grading food products, particularly, milk, ghee and oil, is very important in view of its bearing on the health of the nation. We have discussed the problems connected with the purity of milk elsewhere. Our remarks here are confined to the grading of ghee and oil. The grading of ghee started in the year 1939 and a peak figure of 3·4¼ lakh maunds was reached in 1944 and then dropped down to 95,000 maunds; today it is about 1·2 lakh maunds. Grading is voluntary and will develop to the extent that a market for graded products can be created. All departments of Government and other institutions, which buy ghee on a large scale, particularly hostels, hospitals, railway contractors, etc., should be made to purchase Agmark products. The graded ghee costs about Rs. 10/- per maund more than the ungraded product. The grading costs would get reduced by improving the efficiency of the operators and increasing the volume of business. A little rise in price is warranted by the superior quality of the products. Grading of mustard oil, groundnut oil, and til oil has also been taken up by the Department and about 1·8 lakh maunds are being graded at present. The railways have decided to buy graded oil for the requirements of their personnel. In some areas experiments with compulsory grading of oil and ghee could be tried by prohibiting the movement of ungraded oil by rail and road.

Sufficient power does not exist under the Agricultural Produce (Grading and Marking) Act, 1937 to prevent misuse of Agmark labels. The Act is being amended to secure these powers.

Laying down specifications for grading agricultural commodities should always be done in consultation with all the interests concerned, the State Governments and the Indian Standards Institution. This is necessary to preserve uniformity in standards throughout India. There are certain products which, though absolutely pure, have regional standards different

from all-India standards. In such cases these regional standards should have the same validity as the Agmark standards and should be accepted by all State Governments. At present this is not so. Agmark standards should also be considered as satisfying the pure food laws of the local bodies.

WEIGHTS AND MEASURES

21. The importance of standardisation of weights and measures may also be stressed here as there is a bewildering variety thereof in the country. To introduce uniform system the Central Government enacted the Standards Weights Act in 1939 and commended it to the States. Bombay, Punjab, Bihar, Mysore and Hyderabad have enacted and are enforcing the necessary legislation. But in Madras, Madhya Pradesh, Uttar Pradesh and Orissa the Act though passed has not been fully implemented. We consider that every State should introduce and enforce the Standards Weights Act as this will benefit both the producer and the consumer.

CHAPTER XVIII

SOME PROBLEMS OF AGRICULTURAL DEVELOPMENT

In this chapter we consider a number of problems of agricultural development most of which are linked to the question of agricultural research. Training and research are discussed in the concluding sections of the chapter; but most of the problems dealt with earlier, whether it be the supply of better seed and fertilisers, the protection of crops from pests, the improvement of agricultural implements, or the devising of better methods for conserving the moisture of the soil, depend for their solution on the successful application of scientific knowledge to the every day operations of the ordinary cultivator.

Minor Irrigation and Rainfall

2. A timely and adequate supply of water is absolutely essential for securing the maximum output from the land. In India nearly four-fifths of the cultivated area is dependent on rainfall which is seldom adequate and timely throughout the whole country. Annual failure of crops in different regions of India is, therefore, a common feature of Indian Agriculture. The most effective way of increasing crop production in India is to provide through irrigation an additional source of water supply to cultivated land.

3. Irrigation is usually classified under two heads, major and minor. The area under major and minor irrigation works is 20·6 million and 26·4 million acres respectively. Another classification is based on the agency providing irrigation *i.e.* whether private or Government. While most of the canals are government owned, wells and tanks, etc. are largely owned by private parties. The area under private and canal irrigation has varied as follows during the last 25 years in two of the principal States for which comparable figures are available:—

(in million acres)

State average for	Irrigation by canal		Private	
	U. P.	Madras	U. P.	Madras
1920-25 . . .	2·15	3·80	5·18	5·07
1925-30 . . .	2·61	3·95	4·98	4·69
1930-35 . . .	3·15	3·88	5·00	4·77
1935-40 . . .	3·63	3·91	5·40	4·41
1940-45 . . .	3·95	4·24	5·25	4·76

It will be seen that there has been practically no increase in private irrigation while the area under canal irrigation has increased by 83·71 and 11·6 per cent in U. P. and Madras respectively.

4. The fact that during the last 25 years the area under private irrigation has remained more or less unchanged, indicates that future scope for individual investment in irrigation works is small; and this is likely to be still further diminished by reduction in the present size of holdings consequent on land reform legislation. Such works will in future have to be increasingly undertaken on a community basis with or without State assistance. We endorse, however, the recommendation of the G. M. F. Enquiry Committee that separate funds should be allotted for sinking of wells by small landholders.

5. Small and medium irrigation works have an important part to play in developing irrigation in the country. They have many obvious advantages. They provide a large amount of dispersed employment. They involve smaller outlay and can be executed in a comparatively shorter period. Being spread over the country, they confer wide-spread benefit, and it is, therefore, easier to mobilise public co-operation in their construction. In view of these advantages and their contribution to increase production, a special provision of Rs. 30 crores has been made in the Plan for minor irrigation schemes. We recommend that every State should carry out a systematic survey of the possibilities of undertaking such schemes, and formulate a programme of execution in an order of priority, so that their construction can be effected in a planned manner. An administrative arrangement under which a trained corps is available to execute such projects on condition that certain contributions in labour and cash are provided by the local people would stimulate local competition for their execution. Such an arrangement is being adopted for the Community Projects and should be extended as and when the State can put in the field a suitable organisation for the purpose.

6. The question of maintaining these works in a proper state of repair has assumed importance, because the traditional systems in vogue have fallen into disuse. While legislation has been passed for the abolition of Zamindari, alternative arrangements have not been made for the repair of tanks which were under the zamindars' management. Frequently the beneficiaries of these works do not pay any water rate or other dues, and repairs are postponed, as responsibility for recovery of their cost cannot be fixed. In view of the large area irrigated by these works and the capital invested in them, we consider that the responsibility for their maintenance and repair should be unambiguously fixed and that the beneficiaries should be required to pay water rate in proportion to the advantage derived by them. The management of these works should vest in the irrigation department which should be made responsible for their annual maintenance and repair and should utilise village panchayats or cooperatives where they exist, as agencies for carrying out these repairs.

7. Since so much of the cultivated area depends entirely on rainfall, problems of dry farming should receive much more attention than they do at present. By preventing field run off and surface evaporation the moisture of the soil can be conserved and crops successfully raised under dry conditions. Research on this important matter has been conducted at Sholapur and Bijapur in Bombay, and at Rohtak in the Punjab. The experiments indicate that fair crop yields can be assured in a bad year and increased yield obtained in a

normal year by following improved methods which include construction of bunds and embankments, production of soil mulch, proper weeding and hoeing and the use of drought resistant varieties of seed. There is scope for wider adoption of these p actices by the cultivators. The difficulties experienced therein have to be studied by the extension staff and their solution found with the help of research.

8. The Meteorological Department has five Regional Forecasting Centres in India which issue weather bulletins daily for farmers. The bulletin is ready by noon, but it is broadcast by the All-India Radio in the Villagers' Programmes in the evening, so that the villagers can listen to it. The Director of Agricultural Meteorology receives check reports from government farms comparing the forecasts with the weather actually experienced. A periodical assessment of these returns shows that the forecasts have a very high degree of accuracy.

9. No steps have yet been taken to ascertain how these forecasts can be used to secure better timing of agricultural operations. The Agricultural Experimental Stations which verify the forecasts could be utilised for this purpose. This will involve some of them being equipped with radio sets to enable them to take full advantage of the forecasts. It is necessary that this should be done as it has yet to be established that the knowledge provided by weather forecasts can be utilised for the better timing of agricultural operations and so for obtaining increased production. It is only after this is established that the forecasts can be passed on to the cultivators and they can be advised to use them to guide their agricultural operations.

Simultaneously with this, each State might select an area where communications can be so arranged that it is possible for the weather forecast to reach the cultivator the same day that it is issued. Observations could then be made how this knowledge helps the farmer in timing his agricultural operations. Many States have community radio sets in blocks of villages and we suggest that a beginning should be made in any such area where this can be organised.

Improved Seed—Production and Supply

10. One of the most outstanding achievements of modern agriculture is the production of improved varieties of seed for different crops. The cultivator is generally well aware of the importance of using good seed. Good cultivators are known to preserve their own seed. Certain varieties of seed have spread by themselves without special departmental efforts; and if improved seed is not making such headway as it should, the cause must be sought in some defect in the seed or elsewhere than in the apathy of the cultivators.

11. The mechanism for the production and distribution of pure seed is generally the same in all the States. A variety is bred and nucleus seed is produced on government farms. It is then multiplied in two or three stages with two or three classes of cultivators, usually known as A, B & C. The seed from government farms is handed first for multiplication to 'A' class cultivators. The seed multiplied is then made over for further multiplication to 'B' class cultivators after which it is distributed. In some States, however, there is a third stage of multiplication. It is noticed that the larger the number of intermediate stages, the less

the purity of the seed available for distribution. Failure to rogue properly, mixture with other grains and bad storage are some of the causes of the loss of purity and viability.

12. The scope for securing increased production from the use of improved seed is very considerable. We are not satisfied with the progress achieved so far, and feel convinced that there is much room for improvement in the system of multiplication and distribution. Some States have adopted legislation making the use of improved seed obligatory. In the case of crops liable to cross-fertilization, such a course is essential, but where soils differ considerably and require to be planted with different varieties of the same crop, compulsion would be possible only if pure seed of each variety is available. A strong public opinion has necessarily to be built up before legislation can be made effective.

13. In some States the collection and distribution of pure seed was handed over to co-operatives, but the results have not been altogether satisfactory. In the Punjab, where pure seed is collected along with other grains in the course of monopoly procurement, there have been complaints of seed deterioration. We consider that the multiplication and distribution of pure seed should be decentralised as far as possible, so that nucleus seed can be made to reach every single village or a group of villages. This will need a large number of seed farms operated by or under the close supervision of the Agricultural Department. Such farms, if large enough, can also be used for other experimental work. We recommend the location of one such farm in each block of a Community Project i.e. one for every group of about 100 villages. These farms can supply pure seed to the surrounding villages, and the duty of multiplying that seed and making it available for local distribution should be cast on holders of large farms.

14. Pedigree seed, issued for cultivation in a particular area, has to be renewed every four or five years to keep up its quality. This is the present experience of the Agricultural Departments, but scientific explanation for it is lacking. There is need to obtain accurate information as to what exactly happens under the cultivator's field conditions which leads to the deterioration of sound seed. Gradually the responsibility of the Agricultural Department for the supply of pure seed will devolve on registered seed supply agencies, and this information would be useful in arranging this transfer.

15. Experience has shown that pure seed of commercial crops, like sugarcane, groundnut, cotton, etc., spreads much faster than the seed of food crops. This may be partly due to the greater attention paid to these crops in the past, and to the work of specialised agencies created for their development. The supply of pure seed for food crops improved somewhat in the past few years, when considerable stress was laid on their propagation as part of the G. M. F. campaign. In spite of this, the progress has not been very great. It may be that there is special difficulty in maintaining the purity of the seed of crops which are widely consumed as food. The question requires further examination.

16. The Agricultural Departments should guard against the tendency to issue new varieties of seed for adoption by cultivators without full and complete trials conclusively establishing their superiority over those in use. In such cases, carefully docketed information on the experience of various growers of the new variety should be available. Frequent changes of seed—particularly if it is not fully tried—may shake the confidence of the cultivators and add to the difficulties of extension workers.

17. Attention has often been drawn to the saving which can be effected by a reduction in seed-rate but no systematic attempt has been made in any compact area to introduce sowing with a low seed-rate. The practice of treating the seed with a suitable fungicide before sowing requires to be introduced. The advantages of this practice are not widely known and deserve to be demonstrated.

18. We recommend the appointment by the Indian Council of Agricultural Research of a Standing Committee of Plant Breeders and Extension Workers to review every year the technical and administrative aspects of the multiplication and spread of improved varieties of seed and to make recommendations in the light of the review.

Manures and Fertilisers

19. Manures and fertilisers play the same part in relation to the soil as food in relation to the body. Just as a well-nourished body is capable of the maximum effort, a well nourished soil will have the best fertility.

20. The quality of the soil varies greatly in a country of the size of India. A systematic survey of the soils of India has not yet been carried out, though it is generally known that Indian soils are deficient in organic matter, nitrogen and phosphates. Soil samples have been analysed in different areas, but their correlation into a soil-survey for the whole country has not been undertaken. Field experiments have been conducted in various regions to determine the response of crops to various combinations of organic and inorganic manures, but in most cases crops responses and soil analysis have not been linked up. A very little work in connection with the effects of trace-elements in the soil has been done hitherto. It is now proposed to undertake a programme, designed to correlate soils, manurial trials and crop responses over the whole country. A beginning will be made with the Community Project areas and other selected areas in each State. A systematic study of the effect of trace elements in soils is also being made. Assistance under the T. C. A. has greatly facilitated this work.

21. Organic matter, nitrogen, phosphorus and potash are the chief constituents which must be supplied to the soil. Nitrogen is of the first importance in crop production. The soil has a mechanism by which it absorbs nitrogen from the atmosphere and makes it available to living beings in the form of grain and fodder ; men and cattle derive energy from the consumption of these and the nitrogen taken from the soil is returned to it in the form of organic manures like farmyard manure, green manure, oilcakes, composts of various kinds, bone-meal and various types of chemical fertilizers, thus completing the nitrogen cycle.

Next in importance is phosphate. Plants absorb phosphates from the soil which are returned to it through animal and human excreta and through decayed plants and their ashes and the bones of dead animals.

Indian soils, while deficient in nitrogen and phosphates, are generally rich in potash. Lack of potash does not, therefore, present a serious problem at present but it is one that should be watched.

22. Manures may be classified into two categories—(*a*) organic manures and (*b*) inorganic manures. Organic manures may further be sub-divided into (*i*) bulky organic manures; (*ii*) concentrated organic manures. Bulky organic manures include farmyard manure, compost manure, nightsoil and green manure, while concentrated manures are oil cakes, bonemeal, dried blood, horns and hoofs, etc. Tropical soils often lack humus. The addition of bulky organic manures like farmyard manure, which is a by-product in farming by bullocks, helps the soil by increasing its water holding capacity, improving soil aeration, and by changing the plant nutrients through slow decomposition into forms readily available to plants. There are other advantages in the use of organic manures namely (*a*) steadiness in yield over a period of time (*b*) benefit to the succeeding crops by their residual effects, and (*c*) ability to withstand unfavourable weather conditions.

23. On the basis of the 1951 livestock census the total production of fresh dung is estimated at 800 million tons ; however, all this valuable manure does not go back to the land. A large part of it—which may amount to nearly 50 per cent—is used as fuel by cultivators. The dung which is now burnt can be saved for agriculture if suitable supplies of fuel are made available. We have recommended in the chapter on Forests the creation of village plantations and popularising the use of coke.

The above estimates do not relate to cattle urine which is rich in nitrogen but mostly goes to waste. Conservation of cattle urine should be an item of extension work in all States and increasing attention should be paid to the conservation of this useful source of manure.

24. Human excreta and urine are very important sources of nitrogen, phosphorous and organic matter. Their maximum utilisation occurs in China and Japan but in those countries they are applied in a raw uncomposted form, and harmful bacteria find their way to the crop and affect the health of those who consume it. This is avoided in India, where such manure is almost invariably applied after proper composting.

25. In urban areas, where the night soil is removed by sweepers, it is usually composted with refuse, and the manure is sold to the cultivators. Most State Governments have passed legislation making it obligatory on Municipalities and Notified Area Committees to dispose of night soil in this way, and a steady improvement in the amount of urban compost is noticeable.

	Lakh tons
1946-47	2·89
1947-48	3·80
1948-49	5·17
1949-50	9·23
1950-51	10·63
1951-52	13·50

Out of about 3,000 towns where Municipalities and Notified Area Committees are functioning, composting is in progress in 1684 towns only, yielding annually about 17 lakh tons of compost. Provision has been made in the Plan for extension of composting to the remaining towns. At the end of the period of the Plan about 30 lakh tons of compost would be available.

26. The utilisation of urine, whether human or animal, for manure is of even greater importance than the utilisation of nightsoil or dung, as the former provides a much larger proportion of nitrogen. We have not yet developed any efficient and popular system or appliances for utilising urine as manure. Its collection is easier in towns with underground sewerage which have a scheme of sewage-utilisation. In other towns only the nightsoil is collected by municipal authorities. Urine collection is not practicable, unless community urinals have proper appliances for soaking and utilising the urine, and a suitable urinal is devised for family use where the urine can be collected and absorbed.

27. Preliminary work has been done on this subject at the Indian Agricultural Research Institute and the 'Agri-San' urinal is being evolved. In the Punjab, the 'utility' urinal is being recommended for collection and utilisation of urine. The installation of these urinals would help to conserve urine in areas without underground drainage. In order to introduce these urinals into the daily life of the people a beginning should be made with institutions like jails, hospitals, schools, boarding houses, cinema houses and other public places.

28. In the rural areas the nightsoil and urine are not generally being utilised as manure. Here it is necessary to distinguish between a mere return of urine or nightsoil to the soil and its utilisation as manure. When a field is utilised for defecation, as frequently happens in a village, there is a return to the soil but the manurial value of it is small as most of the valuable constituents are lost by exposure to the air and sun. It is necessary to devise a suitable latrine, which villagers can use and which will be sanitary, convenient, and fly-proof and can be shifted. The trench-type holds the field at present. It may be mentioned that the cost of construction and maintenance of these latrines with local materials, can be covered by the sale of the manure that will be made available. Public urinals should also be located at suitable places in the village area.

29. It has been recently found that cattle and human wastes yield fuel gas by appropriate fermentation without much loss of organic matter and of nitrogen compared to the ordinary composting process. If this process, which has successfully passed through laboratory and pilot plant stages, is developed, it will check the burning of dung as fuel and thus augment materially the supplies of organic manures.

30. The growing of leguminous crops and burying them under the soil is a well known method of soil building. The nodule bacteria fix the atomospheric nitrogen in the soil in a form readily available to plants and the turning under of the crop adds organic matter which is essential for keeping the soil in good heart. The value of green manuring has been recognised, but it has not become a common practice even in the area where adequate rainfall or ample irrigation facilities are available. The pressure of population in such areas is generally so great that the cultivator cannot afford to bury a crop which does not directly bring him any return.

On the other hand, larger land holders have been observed to practice green manuring on a reasonable scale. In the case of small cultivators, the introduction of leguminous catch crops, expecially pulses, in the ordinary rotations preferably with phosphate manuring would do much to help increase the nitrogen contents of the soil. They will not only add to the food reserve of the country but would also be valuable as a rich source of proteins. They are important also from the point of view of animal nutrition to which they contribute indirectly in the form of hulls and straw. Where conditions are favourable the State should take steps to encourage growing of such crops by providing necessary facilities and inducements such as supply of seed and irrigation at the time of sowing, and by offering concessions such as remission of water rate or land revenue.

31. The principal oilcakes available in the country are ground-nut, sesamum, rape, linseed, cotton seed, castor, *mahua* and *neem*. They contain about 3 to 6 per cent nitrogen and 1 to 2 per cent phosphoric acid. Used as manure, they serve as carriers of available nitrogen and have shown consistently good results on a variety of crops. Most of the edible oilcakes are valued as cattle-feed, but lately some of them particularly ground-nut, are also being extensively used as manure. We consider this practice undesirable especially as there is a shortage of cattle-feed in the country. Non-edible oilcakes alone should be used directly as manure. Better results are obtained if chemical fertilizers are used in combination with these oilcakes.

32. Blood meals, horns, hoofs, and meat meal are the by-products of the slaughter houses which can be used for fertilizing the soil. Fresh blood in its natural state contains 2·5 to 5 per cent of nitrogen while in the dried form it contains from 8 to 14 per cent of nitrogen depending largely upon the method of manufacture. Dried blood in the form of cakes grinds easily and can be used alone or mixed with other manures. It is estimated that about 10,000 tons of dried blood could be produced from the slaughter houses in the country.

Other material available from the slaughter houses consists of pieces of skin and rejected meat etc., which, mixed together, are generally known under the trade name of 'tankage'. Tankage varies greatly in its chemical composition depending upon the various constituents forming it. It may contain from 3 to 10 per cent of nitrogen and from 7 to 20 per cent of phosphoric acid. These products can be a source of income to the Municipalities, if proper methods of conserving blood and tankage are adopted. The material prepared will soon find a market as a good fertilizer for fruits and vegetables.

The hoofs and horns of dead animals are collected in this country along with the bones. At the assembling centres they fetch higher prices than the raw bones and are, therefore, crushed separately. A considerable quantity is at present exported. The horn meal contains about 15 per cent nitrogen and can be utilised as a fertilizer with advantage.

33. Bonemeal is a good form of phosphatic manure which contains organic matter and some nitrogen also. It is suitable as a manure for all types of soils, more particularly acidic soils, where superphosphates cannot be used. Apart from its phosphatic value, bonemeal helps to increase the phosphorous content of grain and thus enhances its nutritive value. Sterilised bonemeal is also a valuable cattle feed, and its use in this form has great scope.

34. The average annual collection of bones amounts to about 1,50,000 tons. This is only one-fourth of the estimated quantity available judging from the number of cattle that die in a year. It is possible to crush bones completely as bonemeal, but crushing factories, interested in the more lucrative export trade of grist, do not produce the maximum amount of bonemeal. The demand for bonemeal has also to be built up. At present 25 per cent of the bones is converted into bonemeal and the remaining 75 per cent is exported as grist for which there is a considerable demand in foreign countries as it is a source of glue and gelatine. The export of bonemeal is prohibited and the whole of it is used internally as manure. The high price fetched by the export of grist enables the crushers to make bonemeal available at comparatively low prices.

35. The export of bones from India has been going on for a long time. The earliest record is for the year 1884-85, when 18,000 tons were exported. Since then exports have steadily increased and between 1884 and 1951, a total of about 4 million tons of bones have been exported. This export has been criticised on the ground that it deprives the Indian soil of a valuable manurial constituent which should return to it. Indian soils are known to be deficient in phosphates. While grist, which could be converted into bonemeal, is exported, the phosphatic deficiency is sought to be met by importing rock phosphate and converting it into superphosphates. Grist certainly does fetch high prices and there is some saving to the country in the export of grist and its substitution by superphosphates as a source of phosphatic fertilisers. On the other hand, the supply of organic matter and nitrogen is a feature of bonemeal which is not present in superphosphates.

36. In order that the export of bones should cease, steps must be taken to manufacture by-products, like glue and gelatine, in India. Increased crushing capacity should also be provided, particularly in areas far away from railheads, so as to stimulate better collection of bones. Our attention has been drawn to a bone digester which has been lately imported from Japan. Bones are steamed under pressure, and fats and glue are extracted; thereafter the bones become so brittle that they can be crushed in any pounding machine. The bonemeal thus obtained can be used as manure, as well as cattle-feed. The collection of bones will increase only if crushing units or plants like the bones digester are located in areas where collection is not paying because of the long distances from railheads. If any State considers it necessary to impose a provincial ban to enable it to increase the crushing capacity in the rural areas, such a request from it should be favourably considered by the Centre.

37. Coming now to inorganic or synthetic fertilisers, the most important nitrogenous ones are ammonium sulphate, ammonium nitrate, calcium nitrate, ammonium phosphate and urea. The important phosphatic fertilizers are superphosphate, rock phosphate, and ammonium phosphate. In the past 50 years several types of nitrogenous and phosphatic fertilisers were introduced into this country and experimented with at the different experimental stations. Of these, ammonium sulphate and superphosphate are most in use today, and these are at present being manufactured in the country. Ammonium sulphate requires for its manufacture gypsum which has to be transported over long distances. Superphosphate is manufactured mostly from imported rock phosphate and sulphur or sulphuric acid. In

the Indian Union there are no rich deposits of sulphur and the supply position of sulphur in the world is difficult. It is, therefore, desirable that the possibilities of manufacturing ammonium phosphate, which supplies both nitrogen and phosphorous to the soil should be investigated. Deposits of rock phosphate are reported to exist in India and the fertilising value of ammonium phosphate has already been established by field experiments in different parts of the country.

38. There has been some criticism of the introduction of chemical fertilisers without full steps being taken to mobilise all the manurial resources of the organic type. This criticism, in so far as it stresses the necessity of mobilising these resources, is just, but the process is bound to take some time as it necessitates the disturbance of age-old habits. We do not consider that it is necessary to wait for such full mobilisation before introducing chemical fertilisers. The two processes should and can go on simultaneously. Both these types of manure are necessary for maintaining and increasing soil fertility. It is well known that a continuous application of chemical fertilisers only, without the support of any bulky organic manure, leads in course of years to soil deterioration and progressively lower yields. It has, therefore, been a practice to recommend the use of chemical fertilisers more particularly ammonium sulphate in conjunction with bulky organic manures.

Phosphate is best applied to leguminous crops for this not only helps the growth of that crop but also thereby augments the quantity of nitrogen added to the soil which increases with the yield of the leguminous crop. This is, therefore, a useful method of supplying the soil with the nitrogen and phosphorous so much needed for cereal crops.

39. The fact that fertilisers are in demand today shows that their use is profitable to the cultivators. But their high prices in recent years have resulted in larger quantities being utilised for commercial crops in preference to food crops. Unless, therefore, the prices of fertilisers are substantially reduced so as to be within the reach of the grower of foodgrains, any expansion of the use of fertilisers for food crops will be difficult.

40. The problems relating to the conservation, production, distribution and utilisation of manures and fertilisers are sufficiently large and important to warrant their being kept under review by a competent body of experts. We recommend the appointment of a Committee of the ICAR charged with the following functions :—

(*a*) to review annually and to obtain accurate information on the potential supply of manurial resources and the quantities actually developed and utilised ;

(*b*) to estimate the country's manurial and fertiliser requirements, the potentialities for production in different parts of the country and the optimum conditions for their utilisation ;

(*c*) to estimate the response obtained by the use of fertilisers and their economic cost to the cultivators ; and

(*d*) to report on the development of the utilisation of manures, human and cattle wastes, green manures and fuel gas.

AGRICULTURAL IMPLEMENTS AND MACHINERY

41. Though State and Central Governments have paid considerable attention during the last 20 years to agricultural research, comparatively little has been done to improve indigenous implements. The Governments of Madras, U. P., and the Punjab have achieved something in this direction and so have educational institutions and manufacturers, but no definite schemes were drawn up nor was the work systematically followed up until the Agricultural Engineering Section was added to the Indian Agricultural Research Institute in 1945.

42. Agricultural implements may be classified broadly into the following categories : implements (*a*) for preparing the seed bed ; (*b*) for cultivation operations ; (*c*) for harvesting and threshing work ; (*d*) for processing and utilisation of agricultural produce ; and (*e*) for lifting water. Attention has been hitherto devoted mostly to improvement of the implements used for processing the produce and lifting water. Improved sugarcane crushers, the Persian Wheel, and the Revolving Drum illustrate this tendency. There exists considerable scope for improving the efficiency of implements used for seed bed preparation, planting cultivation and harvesting operations.

43. While Dr. Stewart considered that as long as the land is kept free from weeds it makes little difference to crop yields whether '*desi*' implements or improved implements are used, it is generally accepted that by using improved implements a larger area can be covered in the same time, and the timely performance of agricultural operations results in reduction of costs as well as better yields. For certain agricultural operations, *e.g.* turning under of green manure improved implements are essential. The need for encouraging research in this field is thus obvious. For this purpose we recommend that every State should have in its agricultural engineering section a whole-time officer for conducting research on indigenous tools and implements. Many of the existing agricultural engineering sections deal mainly with power drawn machinery, and a special officer is required to devote exclusive attention to the important subject of indigeonus implements. The engineering section at the Indian Agricultural Research Institute will have to be similarly strengthened with a special officer. The section so established in the States and Centre should have adequate facilities for research and trials. Besides conducting research on indigenous implements the special officer at the Centre will try out imported implements. He will also co-ordinate the work done in various parts of the country and pass on the information regarding improved implements to executive agencies. It will be his responsibility to furnish the results of research to manufacture for commercial development.

44. As implements have to be adjusted to crop, soil and climatic conditions, the research problems have to be examined on a regional basis, *i. e.* for a group of States. Regional Committees consisting of technical experts, enlightened farmers, representatives of the State Governments, manufacturers and dealers should therefore be set up by the I.C.A.R. The Committees should indicate the lines on which research and development work should proceed. They would also approve the schemes drawn up by the States and review their progress regularly. The special implement officers at the Indian Agricultural Research Institute

should act as a convener of the regional committees. The Indian Council of Agricultural Research might also convene an annual conference on implements and machinery to which nominees of the regional committees, prominent research workers, and manufacturers should be invited. The programmes of research drawn up by the State and accepted by the regional committees should be accorded a high priority by the Council which should provide necessary financial assistance. It should also offer technical advice and follow a policy of sponsoring research on implements in all the important States.

45. Along with research, the difficult task of popularising improved implements and arranging their supply has to be tackled. This would also be the responsibility of the special officer to be appointed in every State. He will have to do this work with the assistance of the extension staff. As research gets organised in the States and at the Centre, new designs will be evolved. These designs and models will be supplied to the fabricators for manufacturing the implements on a commercial scale. It may be desirable to encourage the establishment of small fabricating units which will provide employment to rural artisans. These could be further developed into workshop where the manufacture of steel trunks, buckets and other utilities could also be undertaken. It would be advantageous to organise local fabricators and blacksmiths into co-operatives for undertaking production of implements. The implements manufactured should be recommended to cultivators only after careful trial and test by the implements officer of the State, who should be provided with the necessary equipment for carrying out tests.

46. As regards arrangements for distribution the implements can be supplied direct by the dealer or from the government depots or through the cooperative societies. Taccavi loans or loan from cooperative societies may be provided to popularise new implements if their cost is high.

47. The facilities for the servicing and repair of implements and tools are not very satisfactory. The technique of the local blacksmiths and carpenters needs to be improved by organising a short training course at important centres. Cooperatives of fabricators besides undertaking production should also provide servicing and repair facilities at reasonable rates. In addition the machine tractor stations and workshops which are being established by the Central and the State Governments should also have a section for undertaking repairs of indigenous implements. Spare parts needed for implements should also be stocked by the machine tractor stations and the cooperatives.

48. During and since the second world war cultivators have begun to use power driven machinery to a greater extent than before. Increased financial assistance under the G.M.F. campaign for the purchase of tractors, diesel engines, electric motors, has accelerated the process. The rising cost of labour as well as its scarcity in certain areas are other factors which have tended in the same direction. The rapid increase in the use of tractors in this country may be judged from the following table :—

	No. of tractors imported
1949-50	3,318
1950-51	4,930
1951-52	7,409

49. The use of tractors has distinct advantages in certain operations such as : (*a*) reclamation of waste or weed infested lands ; (*b*) cultivation of lands in sparsely populated areas wher there is a shortage of labour ; (*c*) drainage and soil conservation operations such as contour bunding, terracing, ridging, etc. The utility of tractors for reclamation operations has been demonstrated by the Central Tractor Organisation which has been working in the Terai areas of U. P. and the kans infested tract of Madhya Pradesh, Madhya Bharat, and Bhopal. The States have also acquired some experience of this work during the last five years. The percise extent to which waste and fallow lands can be brought under the plough can be ascertained only after a detailed survey, but it is believed that out of 98 million acres classified as cultivable, yet lying waste about 11 million acres can be reclaimed in the near future. The Plan provides for reclamation of 2·62 million acres. While the presssure of population is generally heavy in the country as a whole there are thinly settled areas, particularly in Vindhya Pradesh, Madhya Bharat, Rajasthan, etc. where labour shortage is an important limiting factor in the expansion of cultivation. Reclamation by tractors and mechanised cultivation in such tracts has obvious advantages. Large areas can thus be developed either as State farms or for settlement of landless labourers on a co-operative basis.

50. While tractors can safely be utilised for the above purposes, care will have to be taken to see that their use for general cultivation work in other areas does not cause unemployment. The small size of holdings, the absence of avenues of employment other than agriculture, the shortage of fuel-oils and iron and steel are factors which militate against the use of tractors in this country for cultivation on any substantial scale and, by and large, Indian agriculture will continue to depend upon animal power for a long time to come. Even though tractors reduce labour costs and facilitate agricultural operations there is no conclusive evidence that they increase production, though they are a valuable aid when speed of operations is a relevant factor. It is reported that some of the bigger cultivators have acquired tractors recently because of a feeling that those who adopt the mechanical means of cultivation will be accorded special treatment and allowed to retain larger holdings for personal cultivation in case a ceiling is imposed on existing holdings. This has led to displacement of tenants. This trend is likely to be maintained and may even increase unless protected tenancy rights are conferred on those who occupy the land as tenants-at-will and as sub-tenants. Some of the States have initiated action on these lines.

51. During the year 1951-52 tractors worth about Rs. 6 crores were imported into the country. Imports are likely to continue in future at this level and the total value of imported tractors during the Plan period may be around Rs. 30 crores. The imports include machines of numerous makes and designs from various countries. It is understood that about ten to fifteen per cent of the tractors remain out of use as many of them are not suitable for Indian conditions. Import and sale of machines whose utility has not been fully established, not only causes loss to the cultivators but also retards the pace of technological progress as the unfavourable experience of a few farmers discourages many others from making purchases. To avoid the wastage and losses that thus take place it is essential that imports of undesirable types of machines should be reduced to the minimum. For this purpose it is necessary that every

make of tractor received should be tested in regard to its utility under Indian conditions. The test may be carried out at a testing station to be established by the Government of India and imports regulated on the basis of the findings of the test. It should be possible to set up such a station at a cost of Rs. 2 to 2 1/2 lakhs in addition to the recurring expenditure which may be in the neighbourhood of about Rs. 75,000. In this connection it would be an advantage to study the organisation of similar institutions which are operating in U.S.A. and U.K.

52. The cultivators also experience difficulty in obtaining spare parts and the arrangements for servicing and repairs are not always satisfactory. The Government have been trying to remove these difficulties but there is considerable scope for improvement. The Government should see that adequate facilities for supply of spares and repairs are provided either by the dealers or at the State workshop as this would reduce breakdowns, avoid dislocation and lead to better utilisation of the equipment.

53. Though some data are available regarding the cost of reclamation by tractors, comparative and thorough study of the economics of mechanised and bullock-power cultivation has yet to be made. The I.C.A.R. might undertake such a study for various regions and crops.

54. Besides tractors, other power driven machines, electric motors, diesel engines, etc. are becoming increasingly popular in rural areas as water lifting appliances. The power available from these engines can also be used for other agricultural operations such as cane and oilseed crushing, grinding, etc. It is estimated that about 60 thousand diesel engines are required annually for agricultural purposes. To encourage their use many of the State Governmets are providing assistance in the form of loans which the farmers can repay over a period of years. The testing station suggested in paragraph 51 above should also carry out tests on diesel engines and pumping sets, etc. so that the cultivators may be able to ascertain the makes which are inefficient or undesirable.

Plant Protection, Quarantine and Storage

55. No systematic quantitative studies have been conducted so far to determine the losses caused by insect pests and plant diseases in India. The International Conference, organised by the Food and Agriculture Organization in London in 1947, considered that in tropical and sub-tropical countries, where climatic conditions are conducive to a rapid multiplication of pests, the losses in storage alone might be estimated at about 10 per cent. The losses in the field, particularly in the case of epidemics, can be very severe.

56. The Plant Protection Organisation at the Centre consists of a Directorate, with the Plant Protection Adviser as its head, and three main divisions, (*i*) Entomology, (*ii*) Plant Diseases, and (*iii*) Quarantine. There is a Storage Entomologist and a Quarantine Entomologist and other staff to help the Adviser. The directorate advises the states on the control of various diseases and pests and helps them in setting up Plant Protection Organisations in their areas. The locust control work is also its responsibility.

57. The primary function of the Plant Protection Organisations at the Centre and in the States is to fight outbreaks in epidemic form, and they should be sufficiently equipped for this purpose. At the time of an epidemic, the extension and the plant protection staff together with the equipment and insecticides have to be moved to the affected place at short notice.

58. A secondary function of the organisations in the States is the investigation of plant diseases and pests and the prescription of measures for their destruction. Research and investigation must be directed towards evolving remedies and methods which can be adapted to the local practices of the cultivators and which will utilise local materials. Imported insecticides and pesticides should be recommended only after trials when local materials and methods have failed to achieve results.

59. The pests and diseases which occur during the various stages of growth of a plant are well known, and so are the methods of fighting them. In the case of diseases, preventive measures have to be taken, generally at the sowing stage. Both these measures assume a routine character and can be taken by the ordinary field staff with some previous training. No separate organisation for this work at the village level is necessary. Technical staff is, however, required to locate the focus of an onset, to devise special measures in the case of epidemics and to train the field staff. It is necessary to state these considerations as we notice considerable variation in the strength of the plant protection staff in different States.

60. It may be an advantage for each State to study over a period of years all outbreaks which have assumed an epidemic form and to trace the factors favourable for their growth and subsidence. If the results are shown on maps it would facilitate the location of centres of attack, the siting of plant-protection equipment and the determination of the strength of staff required. It may also help in forecasting epidemics.

61. The methods of control adopted for preventing damage to crops by insects and pests may be classified under four categories :

(1) Quarantine,
(2) Biological Control,
(3) Cultural methods, and
(4) Chemical treatment.

62. Quarantine is the prevention of entry of plant and animal pests and diseases from countries outside India. In the past, owing to lack of efficient quarantine arrangements, injurious insects entered the country and established themselves as pests. The requirements for efficient quarantine operations are that the plant material coming into this country should be fumigated. A fumigatorium with modern equipment was established at the port of Bombay a few months ago. The plan provides for setting up quarantine and fumigating stations at Madras and Calcutta. Land frontiers and air ports have also to be guarded against both plant and animal pests and diseases.

63. Biological control involves employment of an insect to check the development of another insect pest or wood. A well known example of such control is the use of the cochineal insect for the eradication of prickly pear. A considerable amount of work has been done in the country during the past twenty years on the science and practice of biological control and methods have been in operation against sugarcane borers and nephanthes of cocoanut in the South. There are facilities for biological control work at the Indian Agricultural Research Institute.

64. Variation in cultural practice is another useful method of control. Introduction of resistant varieties of crops, changes in rotation, time of sowing or planting, deep and shallow cultivation, giving, or withholding of irrigation, are the usual methods tried. The system of control has the advantage that the results are obtained without any additional cost and do not depend on equipment which may not always be locally available. Change in the time of sowing wheat was a major factor in Hessian fly control, and a similar method has dealt effectively with the *Tirak* disease in cotton. The limitations of this method are, that a variation of cultural practice which prevents the onset of the disease or pest has also an adverse effect on crop yields, and the cultivator prefers the former risk. Sufficient stress has not been laid on these methods and there is a tendency to try out insecticides without fully investigating the possibilities of variation in cultural practices or other methods based on resources available to the cultivator.

65. During recent years the use of insecticides particularly D. D. T., B. H. C., and other similar chemicals has increased considerably and manufacture of D. D. T. and B. H. C., which are at present imported, has been visualised in the Plan. These chemicals are superior to those previously used because they act both as contact and stomach poisons. An ideal insecticide, however, is one which kills the harmful insect pests, without creating any hazards to the consumer—human beings and cattle of the plants to which it is applied. It should also not upset in the long run the biological balance in nature by destroying other beneficient forms of plant and insect life. More experience regarding the use of these insecticides and experimental evidence of their effect on human beings and cattle, who consume the straw and grain of the treated plant is required before their extended use can be recommended. There is a difference of opinion regarding their after-effects even in the most advanced countries.

Organised guidance regarding the use of pesticides is also necessary in this country as at present different firms market a variety of brands without authorised tests of the claims made for their products. It should be the function of the Plant Protection Organisations to conduct experiments with the different brands on sale in the market and advise the extension agencies, etc, on the best material available.

66. As regards the manufacture of insecticides and fungicides, the possibilities of utilising indigenous material for this purpose should be more thoroughly explored. For example, pyrethrum has active ingredients of high toxity to many common insects. Black mustard oil also has been claimed to have fungicidal value. The scope in this regard has to be examined as systematic cultivation of such crops would raise the income of the farmers.

67. It is difficult to calculate the loss due to pernicious weeds in terms of money, but in the case of severe infestation, the yield is considerably reduced. Weeds, such as *pohli* and *kandiari* in wheat, cause harvesting difficulties. Some tenacious weeds such as *baru* and *kans* get such a firm hold on the soil that the land goes out of cultivation. In the case of annual and biennial eradication of weeds, the treatment usually is their removal before seed formation, while perennial weeds are eradicated by deep ploughing and exposure of their stems and roots to the severity of the climate. In the United States weeds are being controlled on a large scale by the use of flame throwers and selective herbicides. A research scheme has been sanctioned by the ICAR for the investigation of the control of weeds by means of selective herbicides. While research is in progress for securing definite information on weedicides, control of weeds by mechanical and cultural methods should be encouraged.

68. During the present century there have been five locust cycles during which Rajasthan, Punjab, Pepsu, Saurashtra, Kutch, and parts of Bombay State have witnessed large scale invasions which often resulted in considerable damage. The permanent homes of locusts lie in extensive belts of Africa and countries of the Middle East. Locusts not only attack agricultural crops, but also forests and in fact any green vegetation available. The Government of India have maintained a Central Locust Organisation to fight this menace. This organisation is responsible for control operations in desert areas, while the States are incharge of the work in their cultivated areas. A fresh locust cycle which started in the year 1949-50 is still in progress and the Government have adopted necessary control measure which include spraying and dusting of chemicals on a large scale in the breeding areas. The attacks on crops in cultivated areas are met by mechanical and chemical methods such as the destruction of eggs by exposure after ploughing, burying them in trenches, etc. To intensify the campaign aid in form of aeroplanes, helicopters and other equipment is being obtained under the Technical Assistance Programme.

69. The crops have also to be protected from stray cattle let loose either through carelessness or wilfully by unsocial elements. Such cattle when caught are impounded in cattle pounds. The charges levied for their release are often so small that they do not act as a deterrent. To reduce this nuisance it is necessary that heavier penalties be imposed and exemplary punishment awarded to habitual offenders. The Cattle Tress Pass Act should be amended to secure this. Damage by wild animals to crops and cattle is another menace in certain areas. Organised action against them is necessary as individual action only shifts the burden on to other cultivators. Destruction through gun-clubs, trench pits and similar methods is the only solution.

70. Losses in storage are also quite high. At the village level most of the surplus produce is marketed by the farmer soon after the harvest. Village storage is not, therefore, a major problem and the traditional system of storage is fairly satisfactory. It requires, however, to be further studied.

Losses are greater in the godowns and storage space in the assembling markets as they are continuously occupied and are generally maintained in a poor condition. In their case preventive measure against stored grain pests such as fumigation, super-heating and use of insecticides should be adopted on a wider scale. With the introduction of controls and government imports, steps were taken by the States to construct and lease storage accommodation. It is understood that the Central and State Governments have at present a storage capacity of about 51 lakh tons of which nearly 15lakh tons are Government owned. The Directorate of Storage and Inspection are responsible for the disinfection and fumigation of the Central Government stocks, and also supervise the work in the case of the State civil supplies departments. The Civil Supply godowns are generally located at important railheads and *mandis* where the trade also has its facilities. It would be an advantage if the Civil Supplies staff also actively assist in the periodical inspection and disinfecting of the godowns.

Agricultural Education and Training

71. The ability of the extension service to appreciate the difficulties of the farmers and to render effective assistance in resolving them are factors which will largely contribute to the success of the agricultural programme. The extension staff, particularly at the village and tehsil level, has to be properly trained and equipped for this work. Provision of adequate teaching and training facilities for this staff is an important aspect of agricultural education. Another equally important but broader aspect is the education of the cultivators, so that they may practice scientific agriculture.

72. The main defect of the extension work carried on hitherto has been its relatively greater reliance on propaganda rather than on actual demonstration to the cultivator under his field conditions. This is largely due to insufficient stress being laid in agricultural institutions on practical work and on the correlation of practice with theory. The complaint that students from agricultural institutions prefer jobs to private agriculture largely arises from this drawback. A trainee must be moulded physically and mentally into the practice of the 'dirty hands' method, before he can be expected to demonstrate it successfully in the field, or practice it himself in his own cultivation. We commend the Manjri pattern of two year schools in the Bombay State as the best for ensuring that this background is sufficiently emphasised. These are boarding schools, and every item of work on the farm where the school is located has to be done by the students ; servants are allowed on the farm only during the vacation period. The schools have the additional advantage of being less costly and of enabling the student to supplement his income, during the school period. They supply village-level workers, and also offer agricultural training to sons of cultivators. Their drawback is that a student passing out from such a school is not able to prosecute his studies further in an agricultural college. This handicap should be removed, by extending the course by one year for those who want to prosecute their studies further. This may necessitate a special admission examination for them by the agricultural college.

73. All village-level workers are trained either at agricultural schools, or in special training centres. The total number of schools in the country is 38, and ten more will be started during the Plan period. The training period in the schools generally extends from two to three years. We recommend that all existing schools should be converted into the Bombay type of school as early as possible. As the full requirements of the village-level staff cannot be met by the existing schools, and a large number of village level workers are immediately required for manning the Community Projects 30 special centres have been organised through the help of the Ford Foundation. The training period at these centres is only six months, as ordinarily the trainees have a previous training in an agricultural school or a knowledge of practical agriculture.

74. There are 22 agricultural colleges turning out annually about 1000 graduates, a large proportion of whom are employed by the Agricultural Departments for extension, research and educational work. These colleges, even in a greater measure than the schools, suffer from the same complaint of insufficient stress on practical work. Recognising this drawback the Indian Council of Agricultural Education, recently set up by the Indian Council of Agricultural Research, has suggested that the course should include supervised intensive practical training under rural conditions for a period of two months every year. Another drawback of college education is the absence of facilities for specialisation in extension and farm management. Post-graduate education in research only is available. The result is that the responsibility for extension work or management of farms falls on a person, who has only received a general education in agriculture. A person would be better qualified for service either in the extension or farm management branch, or in the research and teaching branch after he has intensively studied these subjects. If the agricultural college course after graduation is considered too long for these qualifications, facilities should be provided for a bias in the field of special interest in the final year.

75. Short practical courses for farmers of a general nature in different fields of agriculture, such as compost making, pre-sowing treatment of seed, crop protection, cattle feeding, etc., have proved to be of great value. They can be held on each Demonstration Farm at suitable intervals.

AGRICULTURAL RESEARCH

76. Prior to the constitution of the I. C. A. R. in 1930, agricultural research was carried out in the Indian Agricultural Research Institute at Pusa and in the Research Institute attached to the Departments of Agriculture in the various States. The Royal Commission on Agriculture found that 'there was lack of sufficiently close touch not only between Pusa and the Provincial Departments but also among the provincial departments themselves'. The Indian Council of Agricultural Research was, therefore, constituted in 1930, with the object of promoting, guiding and coordinating agricultural research in India.

77. In the course of research work a vast amount of valuable information has been obtained and striking results have been achieved particularly in the field of plant breeding, utilisation of manures and fertilizers and plant protection. The use of improved varieties of seed, pre-sowing

treatment of seed, preparation and utilisation of compost manures, utilisation of fertilisers, etc., are some of the results of research which have come to form a part of an enlightened cultivator's agricultural practice. But the lack of a properly trained extension service has retarded this process. The recommendation of the G.M.F. Enquiry Committee is that such a service should be available throughout the country within a period of ten years, and a beginning is being made in connection with the Community Projects. An extension service helps to connect the research centre with the farmer in the field—his problems being brought to the research centre and new discoveries being carried to him. The absence of such a service has had its effect on research work also, in that the demands on research workers were not sufficiently insistent or pressing and tended to be unrelated to the practical needs of the cultivator. Now that the foundation of an extension service for India is being laid, it is of the utmost importance that for each soil climate and region a compendium should be prepared, for the use of the extension service, of the various research practices which have been sufficiently proved for immediate adoption by the cultivators of the region, and of those which require furher proof by trials in the cultivators' fields. The I.C.A.R. should actively help the States in the preparation of these compendiums by a financial grant, if necessary. It may be necessary to appoint a special officer in each State for this purpose who will work under the guidance of the Agricultural Commissioner.

78. Agricultural research is of a continuing nature. New knowledge has to be gained, and fresh problems tackled. With this object Dr. Stewart had recommended the location of research and experimental stations in carefully selected centres for each crop soil-region. Unless these are established, or existing research centres converted to the attainment of these objectives, extension work may soon come to a standstill. These stations have been of great significance in the agricultural development of Japan, and we consider that the establishment of such stations should be an important concern of the I.C.A.R. and the State Governments.

79. The functions of the I.C.A.R. in respect of promoting, guiding and coordinating research work were masked to some extent by the growth of research by organisations over whose research programmes it had imperfect control *i. e.* the States, the Commodity Committees and the Central Research Institutes. Research work in the States may be divided into two categories :—

(*i*) schemes sponsored by the I.C.A.R. by sharing a portion of the cost, and

(*ii*) schemes, the cost of which is borne entirely by the States.

The latter category of schemes were never formally examined or considered by the I.C.A.R. Its annual review only related to the schemes, the cost of which it shared. The same was the case with the programmes of the Commodity Committees which were only sent to the I.C.A.R. for information. The Central Research Institutes also drew up their own programmes and the I.C A.R. had no voice either in their framing or their modification. The I.C.A.R. was thus till lately largely confined to the research programmes the cost of which it shared with the State Governments. No overall review or coordination of research under such conditions was possible.

80. The idea underlying the Commodity Committees, which between 1921 and 1949 were established for cotton, jute, tobacco, sugarcane, oilseeds and other commercial crops, was that quick results could be obtained if a Special Committee representing all interests concerned with the commodity, *e.g.*, growers, traders, processors, etc., was charged with the function of advancing research in that commodity. These expectations have been fulfilled, and some Committees have done good work. But this exclusive attention to the problems of one crop led inevitably to the disregard of the problems of other crops grown in the same region. This type of crop-wise compartmentalisation of research was discouraged by the Royal Commission on Agriculture in 1929 and also later by Dr. Stewart in 1946. His view was that the functions of Commodity Committees should be confined to problems which arise after a crop is grown, *e.g.*, processing, marketing, etc. but so far as agricultural research is concerned, it must comprise all crops grown on a soil, in the interest of allround agricultural development. "We must start with the soil and consider it in relation to all the crops which it is asked to grow, rather than starting from the opposite direction involved in the widely accepted policy of sectionalising research into a series of crop compartments". Another drawback of the Commodity approach is that it involves earmarking of funds in respect of particular crops, and prevents a balanced allotment of finances, according to the needs of the different crops. And this has actually happened. Relatively much more work has been done on crops under Commodity Committees than on other crops like millets, wheat and rice, though their importance in the national life is equally great, if not greater.

81. A logical result of the acceptance of the commodity idea would be to have Commodity Committees for each important crop in India. But today they are confined only to the commercial crops, like cotton, jute, sugarcane, oilseeds, cocoanuts, arecanuts, tobacco and do not include important food crops, like wheat, rice, pulses, millets, potatoes, etc. At a later stage, it appeared that instead of Commodity Committees, All-India Institutes for research in respect of food crops should be started, and we have all-India Research Institutes for rice and potatoes. But, as already indicated, there is considerable doubt whether crop-wise organisation of agricultural research is the best form of organisation ; and in some cases it is impossible. This may be illustrated by the example of the crops grown in the south-west corner of India. This area grows valuable crops, like pepper, cashew nuts, cardamoms, cloves, lemon-grass, etc. A single organisation for research and development of these crops would lead to expeditious and coordinated action. Such a regional body could well have delegated to itself the functions of the I.C.A.R. A commodity approach here is an impossibility.

82. The Central Research Institutes are the I.A.R.I. at Delhi, the Potato Research Institute at Patna, and the Rice Research Institute at Cuttack. The I.A.R.I. carries out fundamental research but its research programme is not coordinated by the I.C.A.R. with the research programme of the rest of the country. Apart from this drawback, the I.A.R.I. provides the back ground against which applied research is carried out over the rest of the country.

83. The same cannot be said of the Potato and Rice Research Institutes. Ordinarily there are no fundamental problems with respect to individual crops which are unrelated to the ecological conditions in which they are grown, and which would, therefore, have an all-India

application. Even special work like cross-breeding with foreign varieties can be done in Research Stations, all over the country, and Central Institutes for particular crops do not appear to have a special advantage. Their present usefulness lies in enabling research men of high standing to work in a well-equipped laboratory, a facility which a State might not be able to afford on its own.

84. The role of universities in promoting agricultural research is a question which needs attention. Although universities are eminently suited for such research, especially of the more fundamental type, they have not taken it up to any significant extent in the past, owing perhaps to lack of funds and other causes. It is a striking fact, for example, that there is not a single chair of genetics in any Indian university, although breeding of plants and animals, which rests on the foundation of this science, has been in progress in the country for several decades. It is important that whatever limitations there may be in the way of the universities taking an appropriate part in agricultural research should be removed and the universities encouraged to make their contribution to research. This will benefit the universities also by bringing their scientific staffs into direct contact with real problems which are in urgent need of solution for the betterment of the vast majority of our people.

85. India is now embarking on a vast programme of agricultural development. It has before it the ambitious target of doubling agricultural production in the next fifteen years. An extension service, which will cover the whole country in a ten year period, has been proposed to be constituted. The pace of agricultural development largely depends on the speed with which solutions to the practical problems of the cultivators are found by research workers. The whole organisation of agricultural research in India will have to be geared to fulfil this task. The ICAR was constituted in 1929, and its work was subsequently reviewed in 1937 by Sir John Russell and some aspects of its in 1946 by Dr. Stewart. We feel that the stage has now been reached when a high level committee should examine the whole question of the organisation of research in India, and, in particular, the changes that should be brought about in the existing Commodity Committees and Central Research Institutes and research in universities so that they can answer the increased demands for research that will be made upon them. As things stand today, the ICAR organisation has to examine a large number of schemes, and it may have to be considered whether some regional decentralisation could not be usefully introduced.

86. In the meantime, we suggest that the following measures should be immediately adopted to remove some of the drawbacks which affect the Commodity Committees and the organisation of the I.C.A.R.

(*a*) All schemes of the Commodity Committees should be subject to examination and scrutiny by the same body which examines the research schemes pertaining to other crops grown in that area. This would ordinarily be the Standing Scientific Committees of the I.C.A.R. It would be the function of this body to suggest what other schemes should be undertaken on crops grown in the same region to ensure all-round agricultural development and a balanced growth of research in that area.

(*b*) Wherever any research station is working under any Commodity Committee, the same staff should also carry out the research in respect of other crops in the area.

(*c*) The I.C.A.R. should have authority to suggest to a Commodity Committee what coordinated research in respect of other crops grown in the region or rotational crops grown with the main commodity should be undertaken by it.

In order that the I.C.A.R. may be enabled to discharge its statutory duty of coordinating all agricultural research in the country, it should be in a position:

(*a*) to review all research work done in the country. All research programmes, whether of the Commodity Committees, State Governments, or Central Institutes, should be sent to this body for scrutiny and approval. Appropriate dates could be specified for the receipt of these programmes, so that all programmes are received at a time and considered together;

(*b*) to undertake a detailed examination of all research programmes received. The I.C.A.R. today tries to discharge this duty through Scientific Committees, which meet for a few days just before the annual meeting of the Advisory Board and the Governing Body. Such a procedure does not permit a detailed and proper examination. We suggest that these bodies should meet more frequently, and at least twice a year, once for examining the schemes received by the I.C.A.R. and once for assessing their progress. These meetings should allow sufficient time for a proper examination of these schemes ;

(*c*) to take an overall view of research in the country as a whole, assess the result of the past years' working and indicate the direction of future research.

The Research Board which has been recently constituted by the ICAR is expected to perform this function. It must consist of top-ranking agricultural scientists in the country on whom would fall the ultimate responsibility of guiding and coordinating research in the country ;

(*d*) to initiate research into utilisation of agricultural products which today go to waste. Such utilisation has an important bearing on the agricultural economy and no work in this direction has so far been done.

87. A matter which we would like to emphasise, particularly in connection with the research programmes in the States, is the need to associate representatives of progressive cultivators, traders and processors with the drawing up of annual research programmes and their evaluation. Though many of the problems of cultivators will be brought up by the extension service, such association will provide a more direct opportunity for the inclusion in the research programmes of matters which directly interest them.

88. The conditions of employment of the research workers is an important factor in determining the quality and quantity of the work done. In this respect the research workers employed in the projects sponsored by all India organisations, such as the I.C.A R. or Commodity Committees, suffer from the handicap that their tenure is temporary as the schemes on which they work are sanctioned for limited periods. Although it may be argued that a research worker is actually seldom thrown out of employment, the feeling of insecurity is always there. This needs to be removed and the research services brought more in line with other permanent services under the Government. As far as the human element in research is concerned, the important pre-requisites for the production of satisfactory results are stability of service and congenial conditions of work and proper guidance and direction.

CHAPTER XIX

ANIMAL HUSBANDRY

According to the 1951 livestock census there are 150 million cattle and 43 million buffaloes in the country. Bullocks are the principal motive power available for agricultural operations. To a large number of people who are vegetarians, milk and milk products constitute the main source of animal protein. The importance of livestock to the economy of the nation can be judged by the fact that their annual contribution to the gross national income has been estimated at about Rs. 1,000 crores. This excludes the value of the animal power for draft purposes in agriculture and transport.

2. The total bovine population of undivided India as ascertained at the quinquennial census from 1920 onwards is as under :—

Year	Number in millions	Variation taking 1920 as the basis
1920	145·8	100
1925	151·0	104
1930	154·6	106
1935	153·7	105
1940	147·7	101
1945	144·5	99

The figures for the 1950 census which relate to the Indian Union have not been included in the above table as these cannot be compared with the previous figures which are for undivided India.

3. It will be seen from the above figures that the variation is slight, the maximum being 6 per cent. The small variation may be accounted for by marginal errors and it may be said that the cattle population of India is tending to be stationary. What is the relation of this population to the country's resources and requirements ? It is estimated that the quantity of fodder available is about 78 per cent of requirements while the available concentrates and feeds would suffice only for about 28 per cent of the cattle. As concentrates are usually given only to animals which are heavily-worked either for milk or draft purposes, it can be said that two thirds of the cattle can be maintained in a fair condition on the existing fodder and feed resources.

4. The overall estimates made by the Cattle Utilisation Committee show that about 10 per cent of the cattle population or roughly 11.4 million adults are unserviceable or unproductive. These estimates relate to the country as a whole, and the position varies in different

zones. A study of the 1951 census figures shows that the ratio of dry and other cows which are not in milk with those in milk differs very considerably. While in Madras, Mysore, Orissa, Bihar and Travancore and Cochin there are more than 200 dry cows for every 100 milk cows over three years of age, the number declines in Madhya Pradesh and Uttar Pradesh to about 150 and it is as low as 75 in the Punjab. The figures indicate that in the rice belt and the south a comparatively larger number of unproductive cows are maintained. The normal ratio of dry animals to those in milk should be 1 to 1, and the high ratio in the above regions imposes an avoidable strain on the country's resources. Measures for upgrading the cattle and removing useless and inefficient animals to *Gosadans* should, therefore, receive high priority in these areas.

5. As regards requirements of bullock power for cultivation and draft purposes calculations made on a basis suggested by Dr. Burns indicate that in U. P. and Bihar there is a surplus of about 4 million bullocks ; but while some farmers with small holdings maintain bullocks which are not fully utilised, in certain areas of these States there is a shortage of bullock power. It would not be correct to assume that there is surplus bullock power in each and every State. For instance, in Pepsu and Punjab the number available is just adequate to meet the needs. But the efficiency of draft cattle is low and, according to Dr. Burns, could be increased by 60 per cent for the country as a whole.

6. To sum up, the available feeds cannot adequately sustain the existing bovine population. While there is a deficiency of good milch cows and working bullocks there exists a surplus of useless or inefficient animals ; and this surplus, pressing upon the scanty fodder and feed resources, is an obstacle to making good the deficit.

7. The improvement of cattle involves, firstly, the selection of high class animals which are to be found mixed up in India's vast cattle population and their utilisation for up-grading the large number of non-descript cattle ; and secondly, provision for these of an adequate quantity of well-balanced feed, protection against diseases and efficient management.

Work on cattle improvement has been done by the Government, by cattle breeders and by charitable agencies. Among the well-defined breeds in India there are three broad divisions, *viz.*, milch, draft and dual purpose breeds. Recent investigations have indicated that some of the draft breeds are potentially capable of yielding more milk and this capacity can be developed by proper methods of breeding and management. There is thus a possibility of most of the breeds of Indian cattle being developed eventually into dual purpose animals and this is the prime objective of the breeding policy of the Government of India.

The buffalo population in India consists of several indigenous breeds, but not much concentrated work has yet been done on their improvement. The development of buffaloes has now been included in the key-village scheme discussed later in the chapter.

8. Approximately 750 farm-bred bulls of known pedigree are distributed annually by the government in different States for developing draft as well as milch breeds. Besides, there are approved bulls belonging to private cattle owners. But the existing number of approved bulls

meets less than 0.5 per cent of the total requirements of the country. The distribution is defective in that there is no concentration of effort with the object of achieving sustained results. In the absence of arrangements to castrate or remove the inferior bulls before a pedigree bull is located in an area, the progeny of the pedigree bulls have access to scrubs which nullifies the efficiency achieved in the first generation. A programme of cattle improvement should, therefore, include arrangements for the production and use of an adequate number of superior bulls of known parentage and productivity and the elimination of inferior and unapproved bulls.

KEY VILLAGE SCHEME

9. This work is proposed to be taken up at 600 centres under the key-village scheme during the period of the Plan. Each centre will consist of three or four villages having altogether about 500 cows over three years of age. In these areas breeding will be strictly controlled and confined to three or four superior bulls specially marked out and maintained by the farmers for the purpose. The unapproved bulls will be removed or castrated. Other essential features of cattle development, namely, maintenance of records of pedigrees and milk production, feeding and disease control, will receive full attention at every centre. The technique of artificial insemination will also be utilised in these areas as it will accelerate progress and reduce the requirements of bulls. About 150 artificial insemination centres at the rate of one per four key villages are proposed to be established during the period of the Plan.

10. The key villages are thus almost similar to the seed multiplication farms. During 1951-52, a beginning was made by the sanctioning of 94 artificial insemination centres with 196 key villages around them. So far 60 artificial centres and 150 key villages have started work and arrangements are in progress for the rest. The targets for the establishment of key villages, artificial insemination centres and bull rearing farms under the key village scheme during the course of four years are given below :—

Year	Number of key villages	Progressive total	Number of A. I. centres	Progressive total	Number of bull rearing farms*	Progressive total
1952-53	196	...	94	..	..	..
1953-54	206	402	24	118	..	..
1954-55	94	496	16	134	125	125
1955-56	104	600	16	150	100	225

When in full swing this scheme is expected to produce about 60,000 bulls per year. Each Community Project will have an artificial insemination centre at a convenient place with four key villages attached thereto. It would also be an advantage to locate some of the key villages in the suburban areas around the important cities, where development of dairy farming has been recommended.

*Provisional and subject to review.

11. The success of the key village scheme largely depends upon the measure of public support that it invokes. Selection of only high class bulls coming from strains which have proved their value and are suitable to the tract is the most important factor for the success of the scheme as it will be difficult to retain the confidence of the villagers if in the initial stages ill-chosen bulls give poor results. The effects of such mistakes may be aggravated through artificial insemination centres. Sufficient supervisory and expert staff has been included in the scheme to reduce such mistakes to the minimum. A proper administration and technical organisation consisting of one Veterinary Assistant Surgeon, one Milk Recorder and three Stockmen has been provided for every centre. They would assist the villagers in implementing the programme.

12. The improvement of common grazing grounds, the growing of fodder crops in suitable rotations, the preservations of surplus monsoon grass, the use of hitherto untapped fodder resources, etc. are matters which would receive due attention in the selected villages. Demonstrations under village conditions are essential as conditions on Government Farms are not always similar to those in the villages.

13. To facilitate the castration of scrub bulls and the protection of animals against contagious diseases legislation will have to be introduced. The States of Assam, Bombay, Madhya Pradesh, Madras, Orissa, Punjab, West Bengal, Kashmir, Mysore, Ajmer, Delhi and Himachal Pradesh have passed the Control of Contagious Diseases Act while Bombay, Madhya Pradesh, Madras, Travancore Cochin and Delhi have passed the Livestock Improvement Act. Orissa and Coorg have the Livestock Improvement Act under consideration. It is essential that the other States should adopt these two Acts as early as possible.

GOSADAN SCHEME

14. The problem of unproductive cattle and its impact on the economy of the country has already been referred to. Though the availability of fodder and feed will increase to a certain extent as targets of additional production, particularly food grains, are realised, the benefit derived would not be of much consequence as the per capita increase would be insignificant. Mal-nutrition is to a great extent responsible for the disproportionately large number of dry animals. The census returns show that out of a total of 48 million cows over three years of age as many as 28 million are dry. The removal of useless cattle to areas of natural grazing or tracts where fodder supply is not being utilised has, therefore, been accorded a high priority in the Plan for livestock development. The Plan in this connection provides for establishing 160 *Gosadans* at a cost of about Rs. 97 lakhs. Under this scheme, all old infirm and useless cattle will be segregated and sent to *Gosadans* located in wasteland, in forests and other out-of-the-way places where cattle grazing facilities exist which have not hitherto been utilised. The male stock will be castrated. The remains of the dead animals such as hides, skins, horns, hoofs etc., will be fully utilised by setting up a small tannery at each centre.

15. The following programme is envisaged during the period of the Plan under the *Gosadan* scheme :

Year	Number of new Gosadans	Progressive total
1952-53	35	35
1953-54	75	110
1954-55	50	160
1955-56	Nil.	160

Each *Gosadan* will maintain about 2,000 cattle. In 1952-53, therefore, the *Gosadans* will remove from the improvement areas 70,000 animals, in 1953-54 220,000 and in 1954-55 320,000. In removing cattle, preference will have to be given to areas of intensive cattle improvement, that is, key villages. Surplus cattle from the key villages will, therefore, be sent to the *Gosadans* in the first instance.

These measures by the States will, however, touch only the fringe of the problem. It is considered that this movement should receive wide public support especially from charitable institutions like the *Pinjrapoles* and *Gaushalas*.

The Fodder and Feed Problem

16. An important aspect of livestock improvement is the proper feeding and management of the animals. The effects of better breeding can be largely negatived if the animals are not properly fed and looked after. Some experts think that feeding alone can bring about an increase of 30 per cent in the milk production of cows. The supply of green fodder so neccessary for the healthy upkeep of cattle and milch cows is not only meagre, but erratic. In order to improve the supply, leguminous fodders such as lucerne, berseem, cow peas, field peas, etc. should be introduced in crop rotations in irrigated areas. This practice will give nutritious fodder and will also help to increase soil fertility. The possibilities of kudzu vine and clovers etc., should be explored. Kudzu can be successfully grown on steep slopes in regions of good rainfall both for grazing purposes and for checking soil erosion, while clovers can be used for improving the pastures wherever irrigation facilities are available. In improved pastures there must be an emphasis on rotational grazing and wherever feasible pastures should be seeded with napier grass. In the valleys of the foot hills, where surplus grass is available after the monsoon, the possibilities of hay making should be explored.

To begin with, action on the lines suggested above may be attempted in Community Project and key village areas. There is also considerable scope for research on fodder crops and in the possibility of evolving schemes for the supply of green fodder for the greater part of the year. In addition, research, on feeds like mango-seed-kernel and *jaman* seed, etc., should be continued.

DISEASE CONTROL

17. The benefits of improved breeds and better feeding are often obscured by the cattle falling a prey to epidemics. Besides causing a large number of deaths contagious and other diseases, reduce the vitality and the working efficiency of the animals considerably. The common animal diseases are rinderpest, haemorrhagic septicaemia, black quarter and anthrax. Of all the diseases that affect Indian cattle, rinderpest is the most important and is responsible for about 60 per cent of the total mortality. The Government of India have, for some time past, been examining a scheme for the eradication of rinderpest by large scale vaccination with the newly evolved lapinised vaccine. A sum of Rs. 15·7 lakhs has been provided in the Plan to initiate this work.

18. It is also necessary that every State should have adequate facilities for the protective treatment of cattle. At present there are about 2,000 veterinary dispensaries in the country. The Plan provides for expansion of these facilities and during the next five years the total number is likely to go up to about 2640. This would mean an increase of 32 per cent over the existing number. The phasing of the programme is as under :—

Veterinary Dispensaries of State and Local Bodies

	1950-51	1951-52	1952-53	1955-56
Part A States	1311	1380	1486	1773
Part B States	623	666	725	806
Part C States	58	69	81	101
TOTAL	1992	2115	2292	2640

POULTRY

19. Poultry keeping is an important subsidiary industry of the poorer classes in the rural areas, and can be a useful source of income to them. Eggs are a very valuable food and the population would benefit by increased consumption of them. The number of poultry in the country is estimated at about 70 million, but the ordinary village hen is generally undersized and lays only about 50 under-sized eggs in a year. Breeds like white Leghorn, Rhode Island Red, and Black Minorca may improve both the number and the size of the eggs. The Indian Veterinary Research Institute by a process of selective breeding has evolved an Indian strain which would step up the yield by about 100 per cent. This strain should be tested in the field under different soil and climatic conditions. One serious handicap of poultry farming has been the extreme susceptibility of poultry in this country to Ranikhet disease, but an effective vaccine has been recently brought out and the prospects of poultry raising appear to be now more favourable. The State Governments have provided a sum of Rs. 25·15 lakhs during the five year period for encouraging poultry farming. Selective breeding and proper development of poultry have also been included as a part of the key village scheme. It is hoped that in areas of intensive cultivation and in Community Projects areas necessary facilities will be offered to the cultivators.

SHEEP AND WOOL

20. The thirty nine million sheep of the Indian Union constitute an important source of wool and meat for the country. On an average, about 55 million pounds of wool are produced per year and about 31·6 million pounds of wool worth about Rs. 43 crores are exported from India mainly to the U.K. and U.S.A. Rajasthan alone accounts for nearly one third of the total production. The wool locally available is supplemented by about 19 million pounds of fine wool, which is obtained mainly from Tibet. The average yield of wool per sheep is two pounds which is very low. The quantity as well as the quality of the wool of the local sheep can be improved very considerably. For this purpose a plan of regional development has been drawn up by the I.C.A.R. Three regional centres will be established in important wool producing areas, *viz.*, the U. P. or Punjab hills, Rajasthan, and the Deccan Plateau and the quality of the sheep improved by selective breeding in the plains and cross breeding with the Merino breed in the hills.

VETERINARY EDUCATION AND RESEARCH

21. There are at present nine Veterinary Colleges in the country with an output of 275 graduates. In addition to these colleges, the Government of India maintain the Indian Veterinary Research Insititute for post graduate training at Izatnagar, with a sub-station at Muktesar, U.P. During 1949-50, 75 students were enrolled and diplomas were awarded to 69 successful candidates.

In the Five Year Plan a sum of Rs. 84·43 lakhs has been provided for Veterinary education and training. Ninety-two per cent of this will be utilised in Part A States for the expansion of training facilities for veterinary graduates and stockmen. In addition, village level workers will also be trained in giving first aid to cattle.

The existing facilities at the colleges for higher studies are adequate, but difficulties are being experienced by some colleges in obtaining qualified teachers and research workers, especially in the fields of anatomy, surgery and physiology. It may be desirable for some teachers from the colleges to be sent abroad to acquire further training.

22. The total expenditure of the programme provides for livestock and animal husbandry schemes amounts to Rs. 1432·52 lakhs the details of which are given below :—

		(Rs. in lakhs)
(*a*) Central Government—		
Key village schemes		293·53
Gosadan		97·15
Rinderpest		15·70
Other Schemes		5·64
	TOTAL	412·02
(*b*) State Governments schemes—		
Part A States		754·3
Part B States		194·6
Part C States		71·6
	TOTAL	1020·5
	GRAND TOTAL	1432·52

CHAPTER XX

DAIRYING AND HORTICULTURE

For a country like India with a large vegetarian population, milk is a very important food. Despite this fact and the large number of milch animals in India, dairying is in a backward condition, and has not received the attention it deserves. Poor quality cattle, insufficiency of feeds and fodder, high incidence of disease and lack of organised production, improper handling of milk and milk products are problems requiring urgent attention. The improvement of cattle depends primarily upon a proper policy and programme for breeding and feeding. The measures necessary in this connection *i.e.*, schemes for key villages, *Gosadans*, artificial insemination and use of oil cakes as cattle feed etc. have been indicated earlier.

2. The average yield of milk per cow in India is 413 pounds which is about the lowest of any country in the world. The highest yield is 8,000 pounds in the Netherlands followed by 7,000 pounds in Australia, 6,000 in Sweden and a little more than 5,000 pounds in the United States of America. The low average production per animal is responsible for the over-all low production in the country.

3. Out of about 193 million cattle and buffaloes in the Indian Union, 70 million or about 36 per cent. are milch animals *i.e.*, females over 3 years. Though buffaloes form only 30 per cent of the milch animals, they account for 54 per cent of the milk compared with 42 per cent yielded by the cows. This is due to the fact that a buffalo yields on an average 1,101 pounds of milk per annum and a cow only 413 pounds. Besides, buffalo milk is richer in fat and generally contains 6·5 to 7 per cent fat as compared to 4 to 5 per cent in the case of cow's milk. If milk were the only consideration, buffaloes would appear to be more useful than cows. The cow, however, has the advantage as its progeny also provides the motive power for cultivation.

4. According to the 1951 cattle census, the average *per capita* consumption of milk and milk products works out at 5·5 ounces, which comes to about 2·5 *chhataks* or $\frac{1}{16}$th of a *seer* per day. The consumption of milk and milk products, however, varies considerably in different parts of the country. It is as high as 16·89 ounces in the Punjab and 15·72 ounces in Rajasthan, while in Orissa it is 2·64 ounces only. Except Punjab and Rajasthan all the major States are deficient in milk consumption by the standard of 10 ounces per day recommended by nutrition experts.

5. The gross annual milk production in 1945 was estimated at 21·42 million tons, of which 14·5 million tons only were marketable, the balance being either fed to calves or retained for home consumption. The production of milk in villages is on a small scale and scattered. The average daily production per village as given in the Report on the Marketing of Milk in

the Indian Union is only 2·5 maunds. There are, however, some 'milk pockets' or areas of concentrated milk production in the States of Bombay, Uttar Pradesh, Bihar, Madhya Pradesh and Saurashtra where large quantities of surplus milk are available during the flush season. Except in Bombay State, where milk is railed from Anand to Bombay city, surplus milk in other milk pockets distant from urban centres is generally utilised for the manufacture of *ghee* and *khoa*. Even though 95 per cent of the milch cattle are found in the rural areas where 86 per cent of the people reside, the effective demand for milk and milk products is found in urban markets.

6. The supply of milk to urban areas is unsatisfactory both in quantity and quality. This is due to lack of organised production in the surrounding villages, difficulties of transport, production of milk in urban areas under insanitary conditions and at high prices and its distribution by a host of middlemen. It is estimated that at present 60 to 70 per cent of the fluid milk requirements of the urban areas is derived from cattle maintained within the municipal limits. These cattle are generally kept in insanitary and congested conditions which affect their health, milk performance and breeding capacity. They are also a source of nuisance to the surrounding residential area. A majority of these animals when they become dry are sent to the slaughter house. Maintaining cattle in this manner is uneconomic and is a drain on the cattle wealth of the country. The remaining 30 to 40 per cent of the urban milk supply is derived from villages situated within 30 miles of the urban areas. The trade is in the hands of milk vendors whose methods of handling and transporting milk are neither efficient nor sanitary. A few *Pinjrapoles*, *Gaushalas* and Co-operatives are engaged in dairy farming for the supply of milk to urban areas. They, however, meet only a fraction of the total demand. There were also about 75 dairy farms in the Indian Union in 1949, most of which belonged to the Military and Civil Departments of Governments.

7. Urban consumers pay a high price for milk although it is of poor quality. According to a recent survey the retail milk price is higher in India than in any other important country. The high level of prices is principally due to shortage of supply. Measures for increasing milk production have, therefore, to be accorded the highest priority, especially as the *per capita* consumption is much below what is desirable from a nutritional standpoint. Proper arrangements are also necessary for the collection, transportation and distribution of milk. The work started in rural areas surrounding towns like Poona and Delhi for organising milk production and distribution on a cooperative basis has shown good results. The supply of milk to Poona has been increased in the course of about two and a half years from 332 lbs. to 8,240 lbs. per day. A sum of Rs. 2 lakhs was spent on purchasing good class animals and an artificial insemination sub-centre has been started in the suburban area. Feeds and concentrates are purchased wholesale resulting in a saving of 20 to 25 per cent. The quality of the milk is tested in the villages before collection and arrangements made for transporting it to the cities. The scheme has also benefited the consumers as they are able to get milk of good quality at reasonable rates. All this has been brought about at quite a small cost. The experience gained at Poona and other cities indicates the future pattern of development. It is, however, clear that in any scheme of urban milk supply the emphasis will have to be laid on increasing production in suburban areas, gradually shifting the cattle from the urban centres, and adopting strong measures of quality control.

8. The State Plans include 27 schemes for dairying and milk supply. They are estimated to cost Rs. 781·0 lakhs. The expenditure of Part 'A' States has been put at Rs. 770.3 lakhs, Part 'B' States—Rs. 3.3 lakhs and Part 'C' States—Rs. 7·4 lakhs. Among Part 'A' States Bombay has provided for the largest sum *viz.* about Rs. 6 crores or 77 per cent of the total expenditure. This amount is proposed to be utilised for the supply of milk to the cities of Poona, Hubli and Ahmedabad. The West Bengal Government have earmarked a sum of Rs. 50 lakhs for the removal of dairy cattle from Calcutta to the adjacent farm at Haringhat and also for the supply of standardised milk to Calcutta proper.

9. The provision made in the Plan for milk supply schemes is inadequate except in Bombay. Even though the problems of a few cities may be tackled through the schemes envisaged in the Plan, many of the important towns and cities will not get any benefit. The problem cannot, however, be solved by government initiative alone. Better results may be had if the work of improving the milk supply is taken up jointly by the States, the Municipal Committees, the local *Pinjrapoles* and *Gaushalas* and producers' co-operatives.

10. We, therefore, suggest that a Milk Board be set up for each urban area. It should be a statutory body with a paid executive, consisting of representatives of producers, distributors, consumers, municipalities, health authorities and the State Government. A Milk Plan for the area would be drawn up by the Board after careful survey of needs. All matters relating to import, handling and distribution, quality control and prices of milk and milk products should be dealt with by the Board, which would also be responsible for organising production in the suburban and urban areas through a co-operative. The Plan would include removal of cattle from urban areas, a measure highly desirable both from the standpoint of public health and the conservation of the cattle-wealth of the country. The dislodged cattle and their owners may be rehabilitated by providing facilities for settling them in villages around the cities. The Co-operative would supply cattle fodder, feed and other requisites, would provide loans to the members for buying cattle, and would arrange for collection of the milk. The society would also look after the distribution of milk in the town either through its own depots or through licensed private milk vendors or agents. The financial assistance needed by the Milk Board and the co-operatives should be provided by the Government, the municipal committee and the co-operative bank. As the scheme would popularise mixed farming in suburban areas it should qualify for assistance under the Grow More Food Campaign. We also suggest that some of the key village centres may be located in areas surrounding the cities as the increased supply of milk obtained as a result of improved breeding and management will find a ready market in these urban centres. While these steps are being taken to augment supplies, the machinery employed for licensing, sampling, and testing would be strengthened by the Board and prosecutions hastened against the un-social elements who adulterate milk. The standards now in force in different urban areas in regard to the quality of milk and milk products will have also to be examined and revised wherever necessary.

11. As regards rural areas, improvement in milk yield would come about mostly by the better breeding contemplated through the key village scheme and by arranging better fodders and feeds. By achieving a target of food production of 7·6 million tons the fodder availability

would increase to the extent of about 14 million tons. Allowing for wastage etc. about 10 million tons of fodder would be available for consumption by the cattle. The problem of milk production and its greater use in rural areas is thus closely related to the overall rise in agricultural production and standards of living. There is, however considerable scope for improving the production of *ghee* as its sale will bring additional income to the farmer and the use of its by-product, namely, butter milk will enrich his diet.

HORTICULTURE

12. Fruit and vegetables, like milk, can be a very useful element in the diet of the people. Although exact statistics are not available, the area under horticultural crops amounts to about 4 million acres, *i.e.*, about 3 million acres under fruit and 1 million acres under vegetables, which roughly means a little over one per cent of the total cropped area.

13. The production of fruit is estimated at about 6 million tons and that of vegetables at about 4 million tons. Allowing for wastage of about 25 per cent in the case of fruit, this production would permit of consumption of only about 1.5 oz. per head per day and in the case of vegetables even less. According to nutrition experts 3 ozs. of fruit and 10 ozs. of vegetables per day are required for a balanced diet. There, is, therefore, wide scope and need for increasing the production and consumption of fruit and vegetables. This can be achieved partly by increasing the area devoted to their cultivation and partly by adopting improved agricultural practices to get increased yields from the existing area. A substantial increase in production per acre can be brought about by removing some of the existing defects of fruit and vegetable-growing in this country *e.g.*, haphazard lay-out of the gardens, employment of inferior seeds and varieties, absence of regular pruning, training, and weeding, indequate measures against insect-pests and diseases, lack of credit facilities and of arrangements for grading, packing, and marketing, and lastly want of readily available means of conserving the surplus by cold storage and preservation so as to prevent a glut in the market at the height of the season.

14. The State plans envisage a total expenditure of Rs. 121·22 lakhs on schemes relating to horticulture. Part A States account for about 90 per cent of this expenditure. The Schemes are of a varied nature, such as, research on fruits and vegetables, multiplication of vegetable seeds, supply of nursery plants, extension of the area under potatoes, etc.

15. For the further development of horticulture special consideration should be given to the following measures :—

(*i*) Fruit growers in the principal fruit-growing regions should be assisted to organise themselves on cooperative lines for raising nursery plants, controlling pests and diseases, and for marketing fruit and fruit products.

(*ii*) Suburban belts around large towns should be developed for raising fruit and vegetables and the growers organised on a cooperative basis, especially for the purpose of marketing their produce. . Steps should also be taken to popularise kitchen gardening in urban areas by supplying seeds and plants and technical advice.

(*iii*) The preservation of fruit and vegetables, which has been started on a small scale, should be expanded on modern lines. There are at present 467 factories with a total output of 10,000 tons valued at Rs. 1·63 crores. This is less than ·02 per cent of the total produce. Research on modern and indigenous methods of fruit preservation should receive increasing attention at the hands of the Central and State Governments.

16. The Governments of some countries besides providing facilities for research, give assistance and encouragement to fruit and vegetable preservation in the following ways :—

(*i*) sugar for fruit preservation is supplied at the world market rate,

(*ii*) the import of machinery and other essentials is allowed either duty free or at concessional rates, and

(*iii*) concessions are granted in freight rates for transport of raw materials to the canning factories and of the finished products from the canning factories to the centres of consumption of the ports.

With the development of horticulture the adoption of similar measures in this country for encouraging the preservation of fruit and vegetables will have to be considered. At a later stage it may be desirable to make available cold storage facilities at important markets and refrigerated railway wagons for transportation of horticultural produce.

17. The suggestion has also been made that a Fruit and Vegetable Development Board should be established in the Food and Agriculture Ministry which should be responsible for developing the industry on a country-wide basis by enforcing quality standards, supervising research, maintaining statistics and giving technical advice to States which need it. This suggestion deserves consideration.

CHAPTER XXI

FORESTS

Forests play a vital role in India's economy. They are an important source of fuel and also of raw materials, such as, timber, bamboos, lac, gum, *katha*, useful for domestic, industrial and agricultural purposes. They also provide materials for defence and communications as well as grazing for cattle. Forests help in the conservation of soil fertility and play an important part in the maintenance of the water regime of the land. The organic matter they yield improves the tilth and increases the water holding capacity of the soil thereby reducing the run-off. The presence of vegetation acts as a physical check to the velocity of the run-off and reduces its soil carrying capacity. Thus forests protect the hilly areas against excessive soil erosion. Similarly, they protect flat lands against dessication and erosion caused by winds. They exert a beneficial influence on the growth of agricultural crops and on the climate of the region in which they exist.

Forest Areas

2. Accurate statistics regarding the area under forests are not available. "Indian Forest Statistics" puts the area under forests in 1949-50 at 147·7 million acres (230,789 sq. miles) *i.e.* 18 per cent of the total land area as detailed in appendix I. This figure includes a considerable area of unwooded waste land, but no account is taken of tree lands, and there are gaps in coverage in respect of many States. On the whole, however, it is reasonable to assume that the area under forests constitutes about 20 per cent of the total land area.

3. Compared with most other countries this is a low proportion. The Forest Policy Resolution of May 12, 1952, suggests that "India as a whole should aim at maintaining one-third of its total land area under forests. As an insurance against denudation a much larger percentage of the land, about 60 per cent, should be kept under forests for their protective functions in the Himalayas, the Deccan and other mountainous tracts liable to erosion. In the Plains, where the ground is flat and erosion is normally not a serious factor, the proportion to be attained should be placed at 20 per cent ; and in view of the pressure of agriculture, efforts at the extension of tree lands should be concentrated on river banks and other convenient places not suitable for agriculture". The gap between the aim outlined in this resolution and estimates of the area now under forests is very large. Further, the forests are confined mainly to the Himalayas, the Vindhyas and the Deccan ; the Indo-Gangetic basin has been left almost bare. A planned extension of regular forests would be subject to the availability of adequate waste areas and the demands made thereon for agricultural expansion to meet the needs of the ever increasing population. We suggest that an immediate reconnaissance survey be made of

waste land with a view to evolving a system of balanced and complementary land use. We further recommend two-fold measures, namely :—

(1) for each State, the proportion of the area that ought to be under forests should be clearly indicated by the Central Board of Forestry, keeping in view the principle of proper land-use, the nature of the terrain and the national needs. Deforestation may be allowed for the extension of permanent agriculture only where the area under forests is above this proportion or where some equivalent area can be afforested ; and

(2) the area under forests should be steadily extended over waste lands considered suitable for the purpose.

4. The extension of the area under regular forests would necessarily constitute a long-term plan. Considerable improvement can, however, be brought about by renovating large areas which, though classified as forests, have been deforested or have not been properly managed. For instance, about 40 million acres of zamindari forests have vested or will soon vest in State Governments on the abolition of zamindari and jagirdari. Over a considerable portion of this area large scale removal of trees has occurred in recent years as a result of zamindars' attempts to realise their forest assets. Further, overfelling of trees occurred in State forests during the last war. During 1945-46 production of timber and fuel wood increased by about 62% over the pre-war trienium. The rehabilitation and development of these forests should be given the first priority. In most Part B and Part C States, as well as in Part A States where merger has expanded the State-managed forest area, an adequate administrative organisation has to be built up. Provision has been made in the Plan for increasing the number of forest circles in U. P., Bihar, Madhya Pradesh and Bombay ; and we consider that generally this five year period will be best utilised in planning the rehabilitation of these areas and setting up an adequate administrative machinery.

5. There is, however, immediate scope for extending the area under forests in three directions, namely—

(1) afforestation as a measure to prevent soil erosion ;
(2) extension of tree lands ; and
(3) establishment of village plantations.

We have elsewhere outlined measures for preventing soil erosion. The area under tree lands could be immediately extended with the cooperation of the public and of local bodies. The cooperation of the public should also be sought in planting trees along canal banks, village roads and railway lines. Useful work in this direction has been initiated as a part of the Van Mahotsava programme which should be organised on a systematic basis.

Village Plantations

6. There is also immediate scope for the establishment of village plantations for increasing the supply of fuel and fodder. The present production of fuel wood is estimated at 5 million tons* which means an availability of less than half a maund (0·02 tons) *per capita* per annum as against an average consumption of a ton or more in U. S. A. and 0·34 tons for the world as a whole. Even this availability is by no means uniform as will be seen from Appendix II. The Indo-Gangetic Plain has been almost denuded of forests which has caused acute scarcity of fuel and fodder supplies in the rural areas and has resulted in the practice of burning cow-dung which should go to replenish the fertility of the exhausted soil. We, therefore, accord a high priority to protecting and extending village plantations of fuel and fodder species over suitable waste lands in selected localities. Large areas of waste lands have already vested in State Governments as a result of the abolition of zamindari and this should make the task less difficult. The survey referred to in paragraph 3 would serve to locate these areas and village panchayats or their unions should play an important role in the establishment of village plantations. The village plantations may, in the first instance, be set up in areas selected for Community Development Projects. Provision for the establishment of nurseries is being made in areas selected for these projects and this could be enlarged to meet the requirements of village plantations where necessary.

Soft Coke as Household Fuel

7. Another step towards augmenting fuel supplies and conserving cow dung for manurial purposes would be the popularisation of the use of soft coke in the rural areas, particularly in the Indo-Gangetic plains where the need is the highest and where owing to the proximity of the coal fields the supply of soft coke may be comparatively easy. Soft coke being perhaps the cheapest form of fuel is becoming increasingly popular as a household fuel in urban areas. Despatches of soft coke have increased steadily as follows :—

1920	1·8 lakh tons.
1930	7·4 lakh tons.
1940	9·4 lakh tons.
1950	11·5 lakh tons.

The total consumption of soft coke is estimated at about 2 million tons. Very little of it, however, is consumed in the rural areas. India's deposits of low grade coal from which soft coke is prepared are fairly large. Increased manufacture of soft coke can, therefore, be easily organised in the Bihar and Bengal collieries. The real bottleneck will be transport. In view of the increasing pressure on the railway system we would set as a target that an additional 1 million tons of soft coke should be sold for consumption in the rural areas. Its sale in rural areas should be organised through recognised agencies on a no-profit-no-loss basis.

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*The estimate of 5 million tons does not, however, include the quantities of firewood derived from wooded waste lands not classified as forests. The availability may therefore be somewhat larger.

8. The Soft Coke Cess Committee, which was intended to popularise the use of soft coke, ceased to operate during the war as increased supply of coke became difficult owing to the demands of the war effort on the rail transport system. The Planning Commission is examining the suggestion that the Soft Coke Cess Committee should be revived for the purposes of demonstrating in the rural areas the use of soft coke and its economies. A small cess on the sale of soft coke may be necessary to provide adequate finances for the Committee.

Production and Requirements of Timber

9. The production of timber recorded a large-scale increase during the forties. This occurred mainly to meet war requirements and resulted in considerable over-felling of trees and destruction of forests. Production has since declined and is at present in the neighbourhood of 1·8 million tons per annum. Including imports the total quantity of timber available is about 2·10 million tons. This consists of 0·69 million tons of soft wood and 1·4 million tons of hard wood. Although as a result of partition some valuable species have been lost, the principal forest areas are still included in the Indian Union.

10. The present consumption of timber is classified as follows :—

	(In thousand tons of round logs)
(*a*) Government consumption—	
Railway sleepers	340
Other railway demands	80
Defence and other Civil Departments	160
TOTAL	580
(*b*) Manufacturing industries—	
Match industry	120
Packing case industry	75
Plywood industry	60
Tea chests	40
Robbins, battery separators, etc.	40
TOTAL	335
(*c*) Balance available for other—	
Industries and for domestic and building purposes	1195
GRAND TOTAL	2110

About 73 per cent of the total timber is thus utilised in the private sector and the offtake by the Government is about 27 per cent.

11. Since the war the demand for timber for defence has decreased. On the other hand, the demand for domestic and building purposes has increased considerably as a result of increased urbanisation and the rehabilitation programme. Further, as the availability

of steel is far short of total requirements, a policy of conserving steel and replacing it by timber has become imperative and should be adopted in the following cases :

(*i*) Treated timber should be used for telephone, telegraph and electric power lines as is done in most countries of Europe. The annual demand for poles and the means of meeting it in various parts of the country have to be worked out in consultation with the State Forests Departments. We understand that about 50 thousand poles could be obtained annually from the Andamans and 30 thousand poles from the Sunderbans and Mahanadi areas. The Communications Ministry should take steps to utilize these poles and the States should see that the poles are supplied according to specifications.

(*ii*) The Central and State Public Works Deparment should explore the possibilities of greater use of treated timber in building construction and major and minor engineering structures.

With its growing population and large scale development programme, India is likely to experience scarcity of structural materials for a long time to come, and it is, therefore, necessary to effect the utmost economy in this regard. We, therefore, recommend that a National Structural Board should be established which should consider which results of research can be carried into practice and adopted in building construction and how structural materials can be rationalised and standardised so that there may be the greatest possible economy.

12. Adoption of the measures outlined above will result in increased demand for timber. It has already been indicated that exploitable forests, particularly State-owned forests, have been over-exploited during the war. Greater production of timber would generally have to be obtained either from increased yields per acre or through development of potentially exploitable forests (about 20 million acres), which have not yet been exploited for lack of communications. The State Plans provide Rs. 104 lakhs for development of forest communications. It is necessary that schemes for utilising the inaccessible forest areas should be worked out in detail by a Committee of experienced Forest Officers.

13. These are, however, essentially long term measures and the availability of timber is required to be stepped up immediately. This can be done to a considerable degree if besides the conventional species, substitutes like 'salai' and other perishable species are utilised after proper seasoning and treatment by suitable chemical methods, if necessary. The establishment of seasoning kilns and treatment units should, therefore, receive a high priority and it is suggested that

(1) Seasoning kilns and treatment units should be installed in every government saw mill ;

(2) The Railways should increase the number of their seasoning kilns and treatment plants to cover their entire requirements of timber ; and

(3) The D.G.S.D. should give preference to suppliers of wood who have their own seasoning kilns and treatment units.

Further, most species of timber are liable to deterioration through fungal decay or insect attacks, especially when the timber is green and the weather is humid and hot. Large scale wastage occurs on this account due to delay in transport and want of proper storage arrangements in forests and sale depots. These losses can be greatly minimised by the adoption of prophylactic measures giving temporary protection. Similarly the use of treated fence poles by the Defence and Forest Departments would lead to reduced wastage and consequent economy.

14. It is expected that as a result of these measures the availability of timber would be raised by a lakh of tons by 1955-56. Another lakh of tons may be obtained by developing the North Andamans. About 50 thousand tons may also be obtained from the systematic exploitation of the private forests which, as a result of the abolition of zamindari, will vest in the State Governments. The total availability of timber by the end of 1955-56 would thus increase by about 2 to 2.5 lakh tons or by about 10 per cent without increased pressure on exploitable forests.

Forest Industries and Minor Forest Produce

15. Besides supplying timber and fuel, the forests are an important source of raw materials for the matchwood, plywood and paper industries and also potentially for the rayon industry. We have described elsewhere the programme for the development of these industries. The present requirements of timber for the matchwood industry are estimated at about 1,40,000 tons. The Andamans are supplying the needs of the match industry at Calcutta and to a limited extent at Madras and Bombay. The supplies from the Andamans would be increased by about 45,000 tons by 1955-56, which should meet the requirements of the expansion of the match industry during the period of the Plan. As regards plywood timber, the present production is estimated at about 60,000 tons. The supplies from the Andamans may go up by about 30,000 tons. Another 20,000 tons may be found by either substituting timber like mango or arranging imports. The total availability of plywood timber would not, therefore, exeed 1,10,000 tons in 1955-56. This sets the limit to the expansion programme for the plywood industry.

16. Bamboo is the principal forest produce used in the manufacture of paper. Other forest products used for paper manufacture are *Sabai grass* in U. P. and East Punjab and Boswalia Serreta (*Andukwood*) in Madhya Pradesh. With the partition of Bengal, the supplies of bamboo from East Pakistan have been mostly cut off and the paper industry in West Bengal has to depend mainly on Orissa forests for the supply of bamboos. Their annual requirements are estimated at about 75,000 tons, while the yield of bamboos from the Orissa forests is estimated at about 2,35,000 tons after making allowance for the needs of the local population. The extraction of bamboos from inaccessible areas involves a considerable outlay of capital on equipment, overheads and the construction of roads and paths. Long-term leases by the Orissa Government directly to the paper mills should facilitate the development of the unworked areas and the expansion of the paper industry at the mouth of the Mahanadi.

17. India is wholly dependent for its supplies of newsprint and pulp for staple fibre and rayon on imports from abroad. Large quantity of fir logs are available from the Himalayan region which could be utilised for the manufacture of mechanical and chemical pulp for the newsprint and staple fibre and rayon industries. Their annual supplies are estimated at about 1,80,000 tons. We have described elsewhere the feasibility of establishing a project for the manufacture of pulp, which should receive urgent attention.

18. The Forests also yield such minor products as lac, tanning materials, gums and resins, drugs, etc., the annual value of which is estimated at about Rs. 303 lakhs. Two of the minor products, namely, lac and myrobalans occupy position of considerable importance in our export trade. During 1950-51 seed lac, stick lac and shellac worth Rs. 11.87 crores were exported. Internal production of lac could be increased almost indefinitely and should be intensified. Synthetic resins, though costlier, have come into use recently and are replacing lac for electrical insulations. India has almost a monopoly in shellac and it is of considerable importance to this country that shellac should not lose ground to synthetic resins. There have been complaints about adulteration and it is necessary to adopt standardisation of contracts and grading of all exports. India also exported myrobalans and their products valued at Rs. 1.32 crores during 1950-51. There is scope for the expansion of these exports provided collection can be intensified and grading done. Provision has been made elsewhere in the Plan for introducing grading of forest produce.

19. Cane has importance for internal consumption. Indian cane is generally considered less durable than Singapore cane. It would be worthwhile to get seed and cuttings of the varieties grown in Malaya and try them in India. We understand that the durability of the Singapore cane is due to some processing which might be tried in India.

GRAZING LANDS

20. Grazing in State forests yields about Rs. 95 lakhs of revenue annually. More important still, it provides fodder for about 13 million cattle, 3 million buffaloes and 9 million other animals and thus plays a vital role in the agricultural economy. On this subject the Forest Policy Resolution says :—

> "Cheap forest grazing has a demoralising effect and leads to the vicious spiral of reckless increase in the number of cattle, inadequate forest grazing, reduced quality of the herds and further increase in their numbers to offset the fall in quality. Free and indiscriminate forest grazing is, therefore, a serious disservice to cattle breeding... Grazing should not be looked upon primarily as a source of revenue but the simple and obvious way of regulating and controlling grazing as also improving the quality both of grazing and cattle themselves is to institute a reasonable fee for the privilege of grazing."

We are in general agreement with this policy. We would, however, suggest that cultivators and other residents in the rural areas may be allowed to graze their cattle to the extent of their requirements for agricultural purposes or for domestic milk consumption free of charge and all animals maintained over and above these requirements should be treated as part of a commercial enterprise and a fee for grazing at rates bearing a reasonable relation to the value of cattle produce should be levied.

21. There are considerable grazing lands still available in the areas under ryotwari settlements, usually known as village commons. These lands have for long been neglected and are subject to continuous soil erosion. Where suitable local agencies exist or can be created to undertake their management, rotational grazing should be introduced and these agencies assisted in the erection of enclosures. Where management of these areas by local bodies is not found feasible it may be better either to put them under village plantations or under cultivation rather than allow them to suffer further erosion and thus endanger cultivation in neighbouring cultivated areas.

Forest Administration

22. Although forests fall within the State Governments' sphere, in view of the important place of forest products in the national economy and for national defence it is necessary that the forest policies of State Governments in respect of development and conservation should be coordinated. At present, though the Inspector-General of Forests at the centre along with his staff is expected to discharge this function, he is not in a position to do so as the working plans of the States and subsequent deviations therefrom are not referred to him. We understand that in the past this was invariably done but later, it was given up. In our opinion, some measure of centralised coordination of working plans of the States is necessary. We recommend two measures. Firstly, the summary of the State Governments' prescriptions of working plans should be forwarded to the Inspector-General of Forests for scrutiny and comments. Secondly, periodical inter-state conferences should be organised on a regional basis to enable the forest officers of the State Governments responsible for the working plans in States to discuss their working plans and exchange ideas on technical matters. Adoption of these measures will promote the coordinated development of the forest resources of India.

Forests Research and Education

23. Very valuable work has been done in research on forests and forest products at the Forest Research Institute, Dehra Dun. Besides evolving methods for preserving timber and bamboos from attacks of pests and diseases, the Institute has played an important role in the establishment of industries for the production of paper, plywood, resin and turpentine, catechu, santonin from artemisia, ephedrin from ephedra, tamarind seed powder, rosa grass oil and several other commodities. There is, however, a considerable time lag between the research and its application. It appears necessary that a proper documentation office should be organised

for putting the results of research in a form in which the public can understand them and that a closer liaison should be established between the Institute and the industries.

24. The three institutions where forest officers and forest rangers are trained are the Indian Forest College, Dehra Dun, the Indian Forest Rangers College, Dehra Dun and the Madras Forest College, Coimbatore. Their average annual output is 35, 70 and 35 respectively. As stated earlier, a large area of private forests has vested in State Governments and for their proper management the need for trained staff will be greater. The Inspector-General of Forests should ascertain the requirements of all States over the next few years and make arrangements for the training of the required staff at these institutions. The need for a separate research centre in the South, which has special problems of its own, has long been felt and should receive attention.

Forest Tribes

25. Various tribes inhabit forest areas. Measures for their welfare form part of the programme for the advancement of the backward classes, described elsewhere, for which the Plan provides Rs. 28·9 crores. The bulk of the forest produce is collected through contractors who tend to exploit the tribesmen. Useful work has been done in Bombay in organising co-operatives of forest tribes to replace contractors. The number of such societies increased from 11 in 1947-48 to 58 in 1949-50. The value of forest produce handled by the co-operatives during 1949-50 rose to Rs. 17.94 lakhs. It should be the object of State policy throughout India to organise the tribes into co-operatives for the collection of forest produce, and for this a phased programme should be drawn up. Responsibility for organising them into co-operatives should be laid on the forest departments which should have co-operative staff on their establishments.

26. The shifting cultivation practised by some of the tribes has caused heavy damage to many forests. To wean them away from this practice will take time and will not be easy. Gradually they have to be attracted to a settled and more intensive form of agriculture by providing them with opportunities for it and persuading them of its advantages. In some places it may be possible to settle them on cultivable land well away from the forests. In others it will be necessary to instruct them in the art of terraced cultivation and show them that more can be derived from the intensive cultivation of a few permanent fields in well-chosen localities where the slope is not too great than from periodic clearing and sowing of a whole mountain side. In some of the areas inhabited by these tribes fruit is grown by them on a small scale and with the improvement of communications and the introduction of better varieties this can be considerably developed. Generally speaking, the improvement of communications by opening up markets for agricultural and horticultural produce, will be a strong inducement to the tribes to abandon the wasteful system of shifting cultivation and take to settled agriculture.

THE PROGRAMME

27. The considerations on which the programme for the development of forests should be based have been outlined in the foregoing paragraphs. Priorities for particular items in any programme of development of forests may vary from region to region. In general these would be :

(1) strengthening the forest administration where large territories have been merged or private forests have been transferred to public ownership as a result of abolishing zamindari and jagirdari ;

(2) renovation of the areas which were over-exploited to meet war requirements ;

(3) afforestation where large scale soil erosion has occurred ;

(4) development of forest communications ;

(5) development of village plantations to ease the fuel supply position ; and

(6) stepping up supplies of timber by increased use of non-conventional species after proper seasoning and treatment by chemical methods and, therefore, increasing the number of seasoning kilns and treatment units.

28. Based on these priorities the state plans provided for the following expenditure in addition to Rs. 2 crores for Central schemes :

	(Rs. in lakhs)
1. Forest Development	621·3
2. Administration	249·4
3. Forest industries	49·5
4. Education and training	39·3
5. Research	10·0
TOTAL	969·5

Forest development schemes include provision for the management and development of private forests and the waste lands vesting in State Governments besides Rs. 39 lakhs for soil conservation*, 29 lakhs for village plantations and Rs. 104 lakhs for development of communications.

*A further lump-sum provision of Rs. 2 crores has been made in the Plan for soil conservation. The agriculture programme also includes some schemes of soil conservation.

APPENDIX I

Statement Showing Area Under Forests in Different Forest Regions of India (1949-50)

Region/State	Total geographical area (000 acres)	Area under forests (000 acres)	Percentage of colm. 3 to colm. 2
1	2	3	4
Eastern Region—			
Assam	54,408	13,339	24·52
Bihar	45,011	9,043	20·09
Orissa	38,487	2,913	7·57
West Bengal	19,696	4,062	20·62
Manipur	5,518	1,440	26·10
Tripura	2,580	2,213	85·78
Andaman & Nicobar	2,058	1,600	77·74
TOTAL	167,758	34,610	20·63
North Western Regions—			
Punjab	23,922	2,943	12·30
Uttar Pradesh	72,597	8,115	11·18
Jammu and Kashmir	59,379*	7,077	11·92
PEPSU	6,431	182	2·83
Rajasthan	83,327	8,180	9·82
Saurashtra	13,655	592	4·33
Ajmer	1,547	380	24·56
Bilaspur	290	128	44·14
Delhi	370	..	..
Kutch	10,864	127	1·17
Himachal Pradesh	6,692	2,150	32·13
TOTAL	279,074	29,874	10·70
Central Region—			
Madhya Pradesh	83,375	26,181	31·40
Madhya Bharat	29,785	7,138	23·97
Bhopal	4,402	1,436	32·62
Vindhya Pradesh	15,104	4,937	32·69
TOTAL	132,666	39,692	29·92
Southern Region—			
Bombay	71,213	13,097	18·39
Madras	81,786	2 184,4	22·55
Hyderabad	52,572	6,287	11·96
Mysore	18,873	3,010	15·96
Travancore-Cochin	5,852	1,953	33·37
Coorg	1,015	740	72·91
TOTAL	231,311	43,529	18·82
INDIAN UNION	810,809	147,705	18·22

*Includes enemy occupied area.

APPENDIX II

Production and Availability of Fuel

(1947-48)

State	Production (000 tons)	Availability *per capita* per annum (in lbs.)
Assam	148	34·8
Bihar	114	6·4
Bombay	985	6·2
Madhya Pradesh	1061	112·3
Madras	690	27·5
Orissa	96	14·7
Punjab	335	59·4
Uttar Pradesh	1229	40·4
West Bengal	302	27·6
Hyderabad	107	13·1
Jammu & Kashmir	179	91·7
Mysore	308	77·5
Pepsu	5	3·2
Rajasthan	N. A.	..
Saurashtra	36	19·9
Travancore-Cochin	131	32·3
Ajmer	6	19·7
Bhopal	10	26·9
Bilaspur	N. A.	..
Coorg	7	70·3
Himachal Pradesh	16	36·4
Kutch	N. A.	..
Tripura	2	7·0
Vindhya Pradesh	8	5·0
The Andaman & Nicobar Islands	2	144·5
TOTAL	5677	35·6

Source : Indian Forest Statistics 1947-48. Conversion from cubic feet to tons has been done on the basis of 50 cubic feet to a ton.

N. A. : Not available.

CHAPTER XXII

SOIL CONSERVATION

Soil conservation in its widest sense includes not only control over erosion but all those measures like correction of soil defects, application of manures and fertilizers, proper crop rotations, irrigation, drainage, etc., which aim at maintaining the productivity of the soil at a high level. In this sense, soil conservation is closely allied to improvement of land use in general. In this chapter, however, we are concerned only with the measures for control over soil erosion, which is one of the most serious problems facing the country. Large areas in all parts of the country have been rendered useless as a result of soil erosion and areas which suffer from moderate or slight erosion and whose productivity is reduced as a result of soil losses are very much larger still. Sheet erosion, which consists in the washing away of the fertile top layers of the soil, is the most extensive form of erosion, occurring even on moderately sloping lands. It causes enormous losses to agriculture every year by reducing the productive capacity of lands. Gully erosion, which generally starts after sheet erosion has remained unchecked for some time, has already rendered large areas useless, and is steadily increasing. In the dry western part of the country, erosion as a result of wind action and covering of croplands by desert sands along the margins of the Rajasthan Desert constitute serious problems.

2. The most important cause of erosion is destruction of forests and other vegetation from sloping lands, desert margins and other areas susceptible to erosion. Vegetation acts as a protective cover against the forces of wind and water, protecting the soil from being washed or blown away and preserving the physical and hydrographic balance of nature. Forests for instance, provide the most effective protection against erosion on hill slopes. They break the force of run-off by impeding the flow of rain-water down the slopes and by absorbing large quantities of it in their dense mat of undergrowth. This absorbed water flows away slowly over a period of time; a large part goes into the soil, flows under-ground, feeds springs and streams and is available for utilisation in the foothills and plains. In this way, the hill slopes are protected from erosion, the flow of streams is regulated, the danger of floods is reduced and sufficient quantities of water are available in dry periods. But, when the protective cover of forests is destroyed, this natural balance is disturbed. Rain-water flows down the slopes unimpeded at great speed and carries with it large quantities of soil and other loose material. The hill slopes are denuded of valuable soil and lands in the foot-hill zone where this unassorted mass of sands and gravels is deposited are in turn rendered unproductive. Most of the water flows away during the rainy periods with the result that on the one hand floods are more frequent and more severe and, on the other, little water is available during the dry periods. Ground-water, supplies are also reduced as much less water is absorbed in the soil than before.

Destruction of trees and natural grasses in dry areas has similar harmful effects. Trees act as wind-breaks, reducing the force of the wind, and the grasses bind the sandy soils. But

when such protective vegetation is destroyed, the sandy soils, exposed to the full force of the wind, begin to be blown away. Large areas in the marginal zones of deserts are thus rendered unproductive by the deposition of sand. It is believed that many deserts of the world (including the Thar Desert of India) have increased in area in historical times by this process.

3. The causes of destruction of forests and soil erosion, and the nature and severity of the erosion problem vary greatly in different parts of the country. In some areas as in the forests of Assam, Bihar, Orissa and Madhya Pradesh, shifting cultivation, which is practised by the tribal people living in these areas, is a major cause of destruction of forests. Unregulated grazing is the cause of destruction of forests and consequent soil erosion over large areas in all parts of the country. In the north-western Himalayas, for instance, grazing by cattle, sheep and goats is the most important cause of depletion of the vegetation cover and soil erosion. Similarly, over large parts of peninsular India, the destruction of forests and soil erosion are due mainly to over-grazing. Intensive felling to obtain supplies of fuel or timber, and clearance of forests for extension of cultivation under the pressure of demand for agricultural land from the increasing population are other important causes of deforestation and soil erosion.

Besides the damage caused as a result of the destruction of forests, considerable erosion results from faulty land use practices on farmlands themselves. Failure to practise such measures as ploughing along the contours on sloping lands, proper crop rotations and in particular growing of cover crops are causes of erosion over large areas. Much damage originates also in fallows, grazing lands or uncultivated waste lands which are generally neglected.

4. Measures for controlling erosion and restoring the productivity of eroded lands can be divided into four classes:

(1) *Regulation of land use.*—This includes all measures for securing such alterations in the existing patterns of land use as are necessary to ensure that the different types of lands are used according to their land use capability *i.e.* the use for which, in view of their physical characteristics, they are best fitted. Retiring cultivated lands in highly erodable areas from cultivation and bringing them under forests or grazing ; restrictions on or closure of grazing in badly eroded forests or grazing lands, and settlement of shifting cultivators to permanent cultivation are some examples of the types of alterations which are needed.

(2) Afforestation and preservation of forests by scientific forest management.

(3) Improvement of land use practices on farm lands. This includes such measures as ploughing along the contours and strip-cropping on sloping lands; proper crop rotations ; application of adequate manures and fertilizers ; care of fallows and other uncultivated lands.

(4) *Engineering measures.*—Under this are included construction of bunds and terraces, check dams, channels for drainage of surplus water, gully plugging, etc.

A comprehensive programme of soil conservation for an area would include all four types of measures, although the relative importance of the different measures would vary greatly in different areas depending upon the particular conditions of the area.

5. As a large part of the soil conservation work has to be done by the farmers, proper understanding on their part of the nature of the erosion problem, and their active participation in soil conservation programmes are essential for the success of these programmes. Improvements in farming practices depend entirely upon the farmers. Government's function is mainly one of convincing them of the need for such improvements and demonstrating the correct methods of adopting them. Financial assistance, in the shape of supplies at reduced rates or in other forms may also be given. Engineering measures have to be taken mostly on the farmers' fields. These may be taken by the farmers, individually or in cooperation, with technical or financial assistance from the Government; or the work may be done by Government and the cost (or a part thereof) recovered from the farmers. Finally, restrictions on usage in forests can be really effective only if the farmers, graziers and other users of forests understand the importance of these and feel that they are essential in their own long-term interest, besides being vital for the welfare of large populations in the plains. Education for soil conservation, publicity and demonstration aimed at creating among the general public and especially among the farmers an awareness of the erosion problem, its causes and effects, and what they can do to control it must form a very important part of soil conservation programmes. Formation of associations of farmers for soil conservation work has also been proposed in order to provide a suitable medium through which soil conservation measures can be taken on a cooperative basis at the village level.

6. Steps for the control of erosion and conservation of soil have been taken for a number of years in certain States like the Punjab (afforestation in the Sivalik Hills) and Bombay (bunding and terracing work in the Deccan). More recently, soil conservation work has been taken up in several other States also. But there has been no country-wide effort in this direction so far, and even in States where the work has been going on, this has been on a very limited scale. The programme for soil conservation in the Plan, though small in comparison with the magnitude of the problem, marks the beginning of a country-wide effort to tackle it. There are many limitations to undertaking a larger programme at this stage. Very little work has been done on soil conservation so far ; data on such basic items as soil characteristics and type and severity of erosion in different parts of the country is lacking, and technical personnel with the necessary training and experience is limited and has to be drawn from many different fields. These limitations will be largely overcome during the period of the Plan. The necessary administrative machinery will be set up at the Central and State levels; survey and research organisations will be established and essential data collected ; suitable legislation enacted, and a much greater consciousness of the erosion problem will be created. As a result, it will be possible to take up a more adequate programme in subsequent years.

7. Programmes for soil conservation and improvement of land use during the period of the Plan should be worked out for each State by its Land Utilization and Soil Conservation Board, the formation of which we are recommending (*vide* para. 19). These programmes should be based on an assessment of the erosion problem in the State. Such an assessment can best

be made by a rapid survey of the reconnaissance type by which the major erosion affected areas are demarcated and the types and degree of erosion in each area broadly indicated. One or more areas of suitable size should be selected for work during the period of the Plan. Preference should be given in making this selection to areas which are representative of much larger regions suffering from erosion so that the experience gained in these would be applicable to the larger areas. In States where soil conservation work is already going on, the possibility of extending the scope of this work should be carefully examined. The State Plans would be reviewed and approved by the Central Land Utilization and Soil Conservation Organisation. Assistance from the experts of the Central Organisation may be obtained by States which may need them in drawing up these programmes or subsequently in their execution. A sum of Rs. 2 Crores has been provided by the Central Government for soil conservation work during the period of of the Plan*. Out of this, allocations will be made to finance approved soil conservation programmes of States.

Soil Conservation Associations

8. As much of the soil conservation work has to be done by the farmers themselves, constitution of co-operative associations of farmers for soil conservation work would be most useful. Such associations should be constituted by law after a specified proportion of the farmers in an area decide upon their establishment. All the farmers in the area covered by such associations would then be required to make such improvements in their farming practices, and on their fields as may be specified by the association. The establishment of such associations is especially necessary in such areas as the catchments of small streams and nullahs, in case of which soil conservation programmes can be successful only with the cooperation of all the farmers in the area. These associations should be given preference in the matter of technical guidance and financial help for approved soil conservation programmes. In the United States, considerable success has been achieved by organisation of farmers into Soil Conservation Districts for carrying out soil conservation programmes. This experience should be drawn upon for the constitution of these associations. The Central Land Utilization and Soil Conservation Organisation should prepare a model law for the constitution of such associations which can be adopted by the States with suitable modifications to suit their particular needs. Encouraging the formation of such associations should be one of the main functions of the State Land Utilization and Soil Conservation Boards.

Legislation

9. Suitable legislation for soil conservation should be undertaken by the States. In the main legislation should provide for:

(*i*) Powers to execute specified improvements on the farmers' fields and allocation of the costs of these improvements between farmers and the State.

(*ii*) Constitution of co-operative associations of farmers for soil conservation work.

* This sum is in addition to the expenditure on soil conservation and land improvement measures provided for in the Plans of several States.

(*iii*) Powers to restrict usage practices in certain areas, which may be declared "protection areas" *i.e.*, areas in which restriction of such practices is necessary for protection of much larger areas from erosion, floods, silting and desiccation.

Research and Demonstration

10. The Plan provides for the establishment of a Soil Conservation Branch at the Forest Research Institute, Dehra Dun, at which research on various problems connected with soil conservation will be undertaken. In addition, six research and demonstration centres will be established in different parts of the country*. Each of these centres will be located in an area of wide spread erosion, and one which has been chosen for a soil conservation programme during the period of the Plan. Each centre will serve as a Pilot station (or laboratory) for the programmes in its respective area and the site for the centre will be selected with this end in view. Data on soils, land-use, rainfall, run-off, soil-wash under different conditions, and effectiveness of various types of vegetation cover in arresting soil erosion will be collected at these centres. They will also serve as centres for demonstration of improved land-use and soil conservation practices to cultivators in their respective areas.

Soil and Land Utilisation Survey

11. For the execution of a long term programme of soil conservation as also for the wider objects of improving land use and increasing crop yields, a soil and land utilisation survey of the country is most essential. Lack of such a survey is one of the major handicaps in the improvement of agriculture. Data on soils and utilisation has been collected by Irrigation Departments of various States, by agricultural experiment stations, universities and other institutions. But such data is confined to limited areas scattered in different parts of the country, and as different agencies have employed different techniques of classification and survey, the data is not comparable. An all India survey of soils and land utilisation should be instituted. Through this survey, data on soil characteristics and the present position regarding land use in different parts of the country should be collected and lands classified according to their land use capability (*i.e.*, the use for which the lands are best fitted). The survey should be carried out by a central agency so that, there is uniformity in the system of classification and in surveying and mapping techniques and scientific nomenclature, so that results from different areas are comparable. Programmes of soil survey and testing of soils which are being carried out at present by the Indian Agricultural Research Institute and by other agencies should be co-ordinated with the work of the survey.

Soil Conservation in Community Development Projects

12. Improvements in land-use and agricultural practices form the major part of the work in the community projects areas. While the main emphasis in these projects has necessarily to be on increasing agricultural production, adequate steps should also be taken for the control of erosion and conservation of soil and water, wherever these are necessary. In case of projects located in the plains, erosion may not be a problem except in limited areas and soil conservation

*NOTE : The Desert Research Station at Jodhpur will be in addition to these.

measures may be necessary only for these. But in projects located in hilly regions, soil conservation measures should form an important part of the development programme. Large areas suffer from erosion in hilly regions and no permanent improvement is possible if the fertile soil of such large areas is continuously washed away by erosion. Similarly in the case of projects located in the desert and semi-desert areas (as in Rajasthan) afforestation and creation of vegetation belts composed of trees and soil binding grasses must form an important part of the programme. Instructions in soil conservation measures should be given to village level workers and to the other project staff, especially those who have to work in hilly or dry areas. Certain States may also find it suitable to select one or more of the community project areas for their soil conservation programmes during the period of the Plan.

Soil Conservation in River Valley Project Areas

13. A programme of soil conservation should be taken up in the catchment area of every river valley project. Adequate steps for soil conservation in catchment areas are as essential to the proper development of water resources as construction of dams and reservoirs on the rivers. If these measures are not taken and erosion goes on unchecked, the catchment areas will be reduced in their productivity. The high silt loads resulting from erosion will increase cost of operation, impair efficiency, and reduce the life of dams and reservoirs. The danger of damage to dams and other structures by sudden and violent floods will also be greatly increased. Measures for control of erosion and improvement of land-use should, therefore, form an integral part of work in every river valley project. In the case of certain catchments like that of the Kosi in which the rate of silting is known to be very high, adequate soil conservation measures are a prerequisite to the undertaking of the project itself.

14. Surveys of soil erosion and land-use capability should be undertaken in the catchment areas and detailed plans for soil conservation should be drawn up on the basis of these surveys. Critical areas should be demarcated and a programme of preservation of forests and other natural vegetation by regulation of grazing and felling, protection from fires, control over cultivation especially shifting cultivation, should be undertaken. Afforestation and other erosion control measures like gully plugging, construction of bunds and terraces should be taken up in suitable areas. Cultivators should be taught conservation practices and should be given technical and financial assistance for adopting them. The cultivators of each sub-catchment should be encouraged to form themselves into soil conservation associations and formulate a conservation programme with the sub-catchment as the unit. Approved conservation programmes of such associations should receive preference in respect of technical and financial assistance from the Government.

15. The adoption of conservation measures will generally involve curtailment of the customary rights of certain classes of persons like graziers and shifting cultivators. Such restrictions are, however, absolutely necessary in the interest of the entire population of the river valleys and should be strictly enforced. Suitable arrangements should, however, be made for resettling and providing alternative means of employment for the populations whose privileges or rights may have been restricted.

16. Most of the large rivers of the country pass through the territories of two or more States. In many cases, soil conservation measures are necessary in one State in which the catchment area of the river is located while areas receiving irrigation or flood control benefits are located in other States. Soil conservation measures in such cases can be effective only with the cooperative effort of all the States concerned, and if suitable arrangements are made for financial contribution towards the cost of these measures by States which would receive benefits from the projects. One of the principal functions of the Central Organisation which we are proposing would be to secure agreement among the various States concerned, and to see that a co-ordinated programme of soil conservation is adopted for every river valley project.

The Problem of the Rajasthan Desert

17. Desert and semi-desert conditions prevail over a large area in western India—in Rajasthan and the adjoining areas of Punjab, Pepsu, U. P., Saurashtra and Kutch. The Planning Commission in its Draft Outline Report drew attention to the reported advance of the desert and encroachment of sand on fertile lands. The Government of India recently appointed an *ad hoc* Committee of experts to investigate this problem. The Committee has recommended a comprehensive programme of action which includes creation of a vegetation belt—five miles wide—along with the western border of Rajasthan ; afforestation measures so as to increase the proportion of forest area in Rajasthan ; improvement of land-use practices, especially the creation of shelter belts of trees by cultivators, and establishment of a research station to investigate the problems of the desert. The report of the Committee has been considered by the Central Government. As a first step, a Desert Research Station is being set up at Jodhpur and a pilot scheme for the creation of vegetation belts and the improvement of land use is being taken up. Research on soils, land-use and silvicultural practices would be undertaken at this station. The scope of research is proposed to be extended later to include detailed hydrological, meteorological, geological and geophysical, investigations. The station would serve also as a centre for the demonstration of improved land-use techniques and the distribution of seeds and other supplies.

18. As a number of States are affected by the advance of the desert, and as successful tackling of the problem would depend in large measure upon co-ordinated action by the various States concerned, the need for inter-State cooperation in this sphere cannot be over-emphasized. We recommend that a co-ordinated programme of action, indicating clearly measures to be taken in each State should be jointly worked out by the various States concerned, in consultation with representatives of the Central Organisation.

Organisation

19. For carrying out the programmes outlined above and generally for formulation and implementation of suitable policies in the fields of land utilisation and soil conservation, we recommend the constitution of (*a*) a Central Land Utilisation and Soil Conservation Organisation at the Centre, and (*b*) a Land Utilisation and Soil Conservation Board in every State.

20. The Central Land Utilisation and Soil Conservation Organisation will have two parts :

(*a*) A Board in the Ministry of Agriculture which may consist of the following :—

Secretary to the Ministry	Chairman.
Inspector-General of Forests	Member.
Member (Irrigation), Central Water and Power Commission.	Member.

The Board should have a full time Member-Secretary who should be a senior officer with experience of agriculture or forestry work.

(*b*) A council composed of representatives from the various States. This Council should meet once or twice each year to frame general policies.

The Board should have an adequate technical staff for carrying out the various functions of the organisation which would be as follows :—

(*i*) Assessment of the soil erosion problem in the country on the basis of the reconnaissance survey which would be conducted.

(*ii*) Framing a common policy for the control of erosion and for soil conservation in the country. The Board will scrutinize and review the States' plans for improvement of land-use and soil conservation. Officers of the Board may be loaned to State governments which do not have the necessary staff of their own for assessment of the erosion problem, preparation of soil conservation plans, and, if necessary, also for their execution.

(*iii*) Helping the States Governments in drafting suitable legislation for soil conservation purposes.

(*iv*) Bringing together State Governments with a view to evolving agreed programmes of action on problems like soil conservation in river valley projects areas and checking the advance of the Rajasthan Desert where inter-state cooperation is necessary.

(*v*) *Research and demonstration*—The Soil Conservation Research Branch at the Forest Research Institute, Dehra Dun and the Desert Research Station at Jodhpur will be under the charge of the Organisation. The other soil conservation and demonstration centres will be managed jointly by the Central Organisation and the Board of the State in which they are located. The organisation may aid suitable research programmes at other institutions in India. It should also evaluate and publicise research on soil conservation, and secure adoption of results of such research in soil conservation programmes.

(*vi*) *Survey*—The proposed Soil and Land Utilisation Survey will form part of the Organisation.

(*vii*) *Publicity and Training*—The Organisation will have suitable programmes for publicity and for the training of personnel for soil conservation work.

21. A State Land Utilisation and Soil Conservation Board should be created in the Department of Agriculture or Forestry of every State. The composition of the Board may be as follows :—

Minister-in-charge of Agriculture or Forestry	Chairman.
Secretary, Development Department	Member.
Chief Conservator of Forests	Member.
Chief Engineer, Irrigation	Member.
Director of Agriculture	Member.
Head of the Revenue Department in the State	Member.

The Board should have a full time Member-Secretary who should be a senior officer with experience of agriculture or forest management work.

Other members may be appointed as necessary.

The Board should have adequate technical staff as well as field staff for the execution of its various programmes. The Member-Secretary of the Board will be the Director of such programmes and should be given a suitable status.

The functions of the Board will be :

(*i*) Assessment of the soil erosion problem in the State. For this purpose a reconnaissance soil erosion survey should be carried out.

(*ii*) Preparation of plans for control of erosion and soil conservation in the State.

(*iii*) Drawing up suitable legislation for the execution of improvement of land use and soil conservation programmes.

(*iv*) Execution of plans, *e.g.*, construction of bunds, terraces and other works ; demonstration of soil conservation practices ; aid to cultivators for execution of approved soil conservation programmes, and promoting formation of soil conservation associations. Those of the measures which lie in the sphere of action of other Departments should be undertaken through the regular agencies of the Department concerned. Thus the necessary restrictions on grazing, felling etc. should be enforced by the Forest Department. The presence of representatives of the various Departments concerned on the Board will ensure the co-operation of these Departments.

(*v*) Framing suitable programmes for demonstration and research, publicity and training of personnel.

(*vi*) Supervision and control of Soil Conservation Associations

CHAPTER XXIII

FISHERIES

Fisheries in India, though very under-developed, contribute annually about Rs. 10 crores to the national income. Rich in proteins, vitamins and mineral salts, fish is a valuable protective food. It forms an important constituent of the diet over considerable areas. The development of fisheries is, therefore, one of the most promising means of improving the diet of the people.

PRODUCTION TRENDS

2. The inadequacy and inaccuracy of the existing statistics for fisheries have been emphasized by several committees. The Report on the marketing of fish published by the Directorate of Marketing and Inspection is the principle source of information. Some useful data about the marine fisheries has been recently collected by the Central Marine Fisheries Research Station. The technical committee on the coordination of fisheries statistics has examined the question of statistics in detail. Its report was published in 1950 and we hope that with the implementation of its recommendations by the Central and State Governments the position will steadily improve. A sum of Rs. 8 lakhs has been provided in the plan for the improvement of fisheries and livestock statistics.

3. Precise estimates of production of fish are difficult to obtain. The available evidence, however, shows that the present production is about a million tons, out of which about 70 per cent is sea and estuarine fish and 30 per cent fresh water fish. Madras, Travancore-Cochin and West Bengal are the three States which account for a major part of the production. As comparable figures of production for a sufficiently long period are not available, it is difficult to examine production trends. Information about the quantity of fish landed on the west coast of Madras since 1936-37 is available. The figures indicate :

(*i*) wide variation in the catch from year to year ; and

(*ii*) an increasing trend in production.

However, in the absence of comparable data for other areas, it cannot be concluded that production of sea fish as a whole shows an upward trend.

4. As regards fresh water fish no figures are available to show the trend of production. The stocking of more than 70,000 acres of water area under the Grow More Food schemes should have increased production. On the other hand, the opinion has been expressed that a progressive decline in the production of fresh water fish has taken place due to :—

(*a*) the excessive growth of water hyacinth and submerged weeds in impounded waters ;

(*b*) neglect of tanks, beels, etc. consequent on the development of major irrigation works ;

(*c*) the silting of rivers, channels and beels ;

(*d*) over-fishing and destruction of finger-lings and immature fish ; and

(*e*) construction of dams and weirs over rivers which obstruct the migration of fish from and to their customary spawning grounds.

The measures required to promote the development of the inland fisheries are outlined in subsequent paragraphs. Here, it will suffice to emphasize the importance and urgency of adopting adequate measures.

5. At the present level of production the availability of fish for the country as a whole works out at 3.4 lbs. per annum per capita as against 16 lbs. in Ceylon, 70 lbs. in Burma and 90 lbs. in Japan. A considerable section of the population of India does not, however, eat fish. Allowing for this, the average per capita consumption is estimated at 4 94 lbs. Availability varies considerably from State to State. Travancore has the highest consumption of 21 lbs. per capita (about one ounce per day). Other States which consume considerable quantities of fish are West Bengal (13 lbs) , Madras (12 lbs.), Bombay (7 lbs.), Assam (6 lbs.) and Orissa (5 lbs.). Consumption is lowest in the Punjab (0 8 lbs). The requirements of a balanced diet are estimated at 1.3 ounces per day per adult *i e.*, 30 lbs. per capita per annum of fish and/or meat. The availability of meat is poorer still This indicates a large gap between availability and requirements.

Scope for Development

6. The scope for increasing production of fresh water and sea fish is certainly large. In the case of inland fisheries statistics for the area developed so far are not available, but it is known that only a fraction of the water area of 15 million acres under rivers, canals, jhils and tanks has been utilised. No surveys have, however, been carried out to determine the extent of culturable waters. The back water and estuarine fisheries are still very largely underdeveloped. India's coast line is 2,900 miles long. Though it is not as well indented as the coasts of, say, England and Japan and has a rather narrow continental shelf, it offers considerable scope for the development of sea and estuarine fisheries. Only a small portion of the resources is being exploited at present mainly for two reasons, namely, (1) the small country craft cannot operate beyond a few miles from the shore and (2) over a large area adequate harbour and landing facilities do not exist. Recent charting and exploratory offshore fishing operations carried out in the Bay of Bengal and along the west coast indicate that our seas are rich in a variety of commercial species of fish which can be economically exploited.

Inland Fisheries

7. In order to draw up a phased programme for the development of the inland fisheries the first essential step would be to conduct a rapid survey so as to determine the culturable waters and simultaneously to investigate fish seed resources for undertaking large-scale stocking operations. It would also be necessary to classify culturable waters into (1) those that can be

utilised for fish culture without any expensive measures for their improvement and (2) derelict waters which would require a large capital outlay for improvement. For States which are at present deficit in fish seed resources, supplies would have to be arranged from surplus areas, where large-scale collection and distribution of fish seed would have to be organised. Large wastages occur in the transport of fingerlings and fry. Research work done at the Central Inland Fisheries Research Station at Barrackpore and the sub-station at Cuttack has demonstrated that mortality during transport and cultural operations can be greatly reduced. This work should be intensified. The bulk of the existing culturable water area consists of tanks and beels. Carp, which are the fish most frequently reared in Indian waters, do not spawn in impounded waters with the result that stocking operations in the same water have to be carried on year after year. If the artificial spawning of carp could be developed or alternatively such species of fish located as would spawn in impounded waters and would be otherwise suitable for stocking, the industry could be improved considerably. The artificial spawning of species of fish that do not normally breed in enclosed waters has been successfully achieved in Brazil, and in Indonesia common carp from Europe are made to spawn three to four times in a year by special methods. We recommend that a high priority should be attached to research in this direction.

8. Other necessary steps for the development of inland fisheries would be to prevent over fishing and the destruction of fry and fingerlings by adopting, where necessary, adequate legislative measures, to improve derelict tanks and beels and to demonstrate improved cultural practices. The inland fisheries are dispersed all over the country side and their development requires an extension organisation on a large scale. We do not however visualise a separate organisation for the purpose and suggest that fishery extension work should generally form part of the normal duties of the agricultural extension organisation and pisciculture should form part of agricultural education in agricultural schools and colleges. Some fisheries staff may, however, be necessary at State and other levels for giving technical guidance and training to the field staff. Arrangements exist at the Central Inland Fisheries Research Station for theoretical and practical instruction in modern piscicultural practices and this staff could be trained there.

9. The appearance of water hyacinth and other weeds in impounded waters has affected their productivity very seriously. Attempts at destruction of this weed have not yielded satisfactory results so far and further investigation and research appear necessary to evolve suitable mechanical devices and chemical weedicides for their destruction.

10. The existence of private rights in village tanks has often hampered the development of inland fisheries. These have largely disappeared as a result of the abolition of zamindaris and fishing rights in them now vest in State Governments. Their systematic management is, therefore, a responsibility of the State. This work would be very much facilitated by enlisting the co-operation of local bodies. We would recommend the acquisition of fishery rights in waters which do not vest in the State Governments if their owners fail to carry out the suggestions made by the State Fisheries Department. The West Bengal Government have already

enacted legislation to this effect. The Fisheries Department should also have facilities for developing fisheries in all State waters without necessarily taking over their management in other respects. We would also suggest that for developing fishing in the multipurpose projects and dealing with other problems arising therefrom the State Irrigation Departments should have staff for fisheries development, which should work under the technical guidance of the Fisheries Department.

11. The long coast line of India has numerous estuaries and brackish-water lakes and backwaters rich in fish. The brackishwater area is computed at about 1.9 million acres, and includes the Chilka lake covering about 256 thousand acres and yielding about 3,000 tons of fish annually. The bulk of the area vests in State Governments and is very largely undeveloped. Its development for fisheries involves large capital investment for the construction of suitable embankments and sluices. The stocking operations should not present much difficulty as fish seed is available locally. In Travancore-Cochin, a small area has been reclaimed and converted into productive fisheries. Similar undertakings should be organised in other States and areas settled in suitable blocks with cooperatives of fishermen.

MARINE FISHERIES

12. Efforts at development of marine fisheries should be directed towards—

1. mechanisation of country craft and introduction of new mechanised boats,
2. introduction of mothership operations,
3. charting for deep sea fishing and development of the located fishing grounds.
4. provision of training facilities ;
5. creating adequate ground organisation ;
6. supply of requisites to fishermen ; and
7. efficient marketing.

The number of boats in operation is estimated at about 70,000. It has been indicated that the small country craft do not operate beyond a few miles from the shore and spend much of their time in going to and from the fishing grounds. Consequently production per unit of effort is low. Mechanisation of fishing operations would enable the fishermen to reach areas outside the range of the existing craft and also to fish for longer hours. The manner in which mechanisation can be accomplished is likely to vary from region to region. In some areas some of the indigenous craft may be found suitable for mechanisation through installation of small inboard or outboard engines; in other area they could be brought into service on the basis of mother-ship operations. In still others it may be found more economical to introduce new types of small powered fishing craft, scientifically designed, and constructed but conforming to the traditional lines of the craft normally used. About 4,000 boats operate along the Bombay coast of which it is estimated that about a thousand would lend themselves to mechanisation. Some *machhwas*, *hodas* and *hodis* on the Saurashtra Coast can also perhaps be mechanised. The catamarans operating along the east coast which are

perhaps the cheapest and most efficient contrivance for landing fish on surf-beaten beaches, are not suitable for mechanisation. Although it is not possible to determine, without a proper survey, the total number of existing boats which could be mechanised, their number may not be very large. In Bombay useful pilot work has already been done in mechanising country craft and in Madras small mechanised vessels, not very different in design from the existing craft, have been introduced and are reported to be doing well. It may be useful to send parties of fishermen from other areas to see these boats for themselves. The Plan provides for mechanisation of 140 boats—100 in Bombay, 20 in Saurashtra and another 20 on the west coast of Madras. Provision has also been made for the introduction of fourteen 30—35 feet mechanised boats of multipurpose type. We would also recommend that the construction of new boats should be guided and supervised so that they may lend themselves to mechanisation subsequently.

14. There is also good scope for development of mother-ship operations on the west coast of India. These would require tugs equipped with refrigeration facilities and suitable for towing the types of craft at present operating along the coast. The Plan provides for 2 tugs as mother crafts—one to be located off the Saurashtra Coast and the other at Cochin.

15. As in other countries, the large scale development of off-shore fisheries in India would require the introduction of larger types of powered fishing vessels such as purse seiners and trawlers. It is believed that purse seiners, which have not yet been tried in India, would be useful for catching mackerel, oil sardines and other shoaling fish which appear in Indian waters during certain months. We have, therefore, provided for two purse seiners, for experimental purposes, one to operate around Karwar, mostly for catching mackerel, and the other to be based at Cochin for catching oil sardines.

16. The Fisheries Department of the Government of India and of the West Bengal Government have done useful exploratory trawling in waters off Bombay and in the northern parts of the Bay of Bengal. They have located good fishing grounds and collected other useful data which indicate that our off-shore waters offer considerable scope for fishing. There are some other areas, such as Wadge Bank and Pedro Bank, which offer equally good prospects. The Ceylon and Madras Government trawlers have charted these areas and demonstrated that there are commercial possibilities. Possibly due to lack of proper ground organisation, *i.e.*, transport, landing and servicing facilities, refrigeration arrangements and marketing, Indian trawlers have not yet fully demonstrated the possibilities of commercial operations and the trade has not therefore, been attracted to undertake such operations. Since 1951, a Japanese trawler, Tayo Maru No. 17, has worked along the west coast. The catches obtained by this vessel during the last six months have been satisfactory. Even under severe monsoon conditions fairly good catches have been obtained. Provision has, therefore, been made in the Plan for a somewhat similar trawler for operations in the Arabian Sea. Bull trawling *i.e.*, operations by two small trawlers working together, as practiced in Japan, appears to offer good chances of success in Indian waters. If the Japanese technique and personnel, with experience of fishing in tropical waters, were made use of in these operations, it should be possible to obtain better results. We have, therefore, provided for 3 small trawlers for the West Bengal

Government for bull trawling. Provision has also been made in the Plan for renovating Government of India trawlers and fitting them with equipment for bull trawling in the Arabian Sea for which they are considered suitable. The Madras Government have also got eight motor fishing vessels which have recently been repaired for off-shore operations.

17. It is well known that fishing grounds carry a greater abundance of fish when virgin than after having been fished, and therefore the initial catches should not be regarded with excessive optimism. For trawling to be commercially successful it is necessary that there should be a sustained catch over a long period. A close analysis of the catch landed in ports is, therefore, essential to ensure that grounds are not depleted

Personnel and Training

18. The commercial success of trawling even though the grounds are well charted, will depend largely on the efficiency of the personnel employed. It is, therefore, important that immediate arrangements be made for the training of adequate Indian personnel. The Government of India have been alive to this and a batch of eight trainees is being given intensive training in modern fishing methods It was also made one of the conditions of the licence granted to the Japanese Company that they would undertake the training of Indian crews In the selection of the crews preference should be given to persons belonging to the fishing community. For a balanced and planned development of the Industry it is necessary to take the assistance of experts with considerable knowledge and experience of ground organisation and marketing, such as fisheries engineers, naval architects and harbour specialists. The Government of India are arranging to get the services of some of these experts through the F. A. O. and under the Point Four Programme. It is important that the experts arrive, so far as possible, simultaneously and work as a team. Provision has also been made in the Plan for obtaining the services of fishing technicians required for manning fishing vessels. Where boats are mechanised or new mechanised boats are introduced, arrangements for training fishermen in handling such boats would be necessary. A sum of Rs. 5 lakhs has been earmarked for the purpose in the Plan.

Ground Organisation

19. As stated earlier the success of commercial fishing operations is very largely dependent on the efficiency of the ground organization which should include landing and servicing facilities, refrigeration plants, quick transport arrangements and efficient marketing. Liaison with port authorities would be necessary for provision of landing facilities. Inadequate servicing facilities have meant plenty of waste of time in the past which should be remedied immediately by permanent long term arrangements. To avoid glut and scarcity conditions and prevent the considerable amount of spoilage which occurs at various stages, arrangements for ice and cold storage and quick transport facilities are necessary at the landing ports and

assembling and distribution centres. The Plan, therefore, provides for installation of 9 ice factories and cold storage plants as follows :—

Madras (West Coast)	1 of 50 tons.
(East Coast)	2 of 50 tons each.
West Bengal	1 of 50 tons.
Bombay	2 of 30 tons each, and 1 for chilling 100 tons.
Orissa	2 of 15 tons.
Saurashtra	1 of 30 tons.
TOTAL	9

20. Transport of large quantities of fish to inland areas at considerable distances from the coastal centres will require the use of insulated or refrigerated rail transport and we suggest that the Railway Board should examine the feasibility of introducing insulated wagons at the important assembling centres. Insulated road vans will also be useful for supplying fish within short distances of these centres and we have, therefore, provided for 11 such vans as follows :—

Madras (West Coast)	2
(East Coast)	1
Travancore-Cochin	2
West Bengal	2
Orissa	2
Bombay	2
TOTAL	11

Landing facilities for the country craft at the fishing hamlets and minor harbours, particularly along the west coast, require the clearance of silted up approaches, and provision for a dredger has, therefore, been made in the Plan.

SUPPLIES AND MARKETING

21. The fishery trade is beset with middle-men. Almost everything required by fishermen for carrying on their trade—boats, hooks, yarns, and sail cloth—has to be obtained through middlemen to whom they have to part with much of their earnings. A boat is generally manned by 3 to 12 men working as a team. It may be owned by one of them or all may be the employees of an absentee owner. There have been complaints that the right types of supplies are not available to fishermen at reasonable rates and in good time, which means a considerable loss of working hours. The difficulty of getting enough hooks, yarn, twine, nylon and other lines has been repeatedly brought out. A determined effort to organise fishermen's co-operatives and liberalise supplies of essential requirements is necessary to eliminate middlemen and enable fishermen to increase their working hours. In Bombay, Madras and Orissa a good amount of pioneering work has already been done in distributing fishermen's requisites through co-operatives. We would recommend that all supplies should be distributed through co-operative societies as far as possible. Provision of these facilities should attract more men to the fishing industry and result in increased production. About Rs. 60 lakhs have been provided in the Plan to facilitate distribution of supplies and subsidize costly items.

22. Lastly we come to the question of efficient marketing which is of the greatest importance for the development of fisheries and improving the lot of fishermen. Most of the fresh water fish is marketed and consumed as fresh fish. On the other hand, only 20 per cent of the sea fish catch is marketed as fresh fish and the remaining 80 per cent is either preserved as sun-dried fish or as salted fish or converted into fish meal and manure Increased marketing of sea fish as fresh fish is necessary not only to meet the large unsatisfied demand for fresh fish but also in the interest of the small fisherman, who will get a better return if it can be marketed fresh. It, however, raises the problems of the supply of ice, cold storage and quick transport facilities. Many fishing centres—and these include some of the most important fishing towns on the west and east coasts—have little or no communications with the hinter-land. Recently some launches on the west coast have been mechanised for carrying fresh fish and this needs to be further developed. Development of communications and quick transport is a long term process. For many years to come the bulk of the catch has, therefore, to be preserved before it is marketed. Preservation by canning has been tried off and on but the attempts have not been successful. Smoking is almost as universal as salt curing in many countries other than India. Possibly the Indian consumer has little taste for smoked fish. For preservation, therefore, we have very largely to depend on sun drying or salt curing.

23. Preserved fish is very largely used by the poor because of its cheapness. The provision of quick transport and refrigeration plants would increase the supplies of fresh fish but would add to its cost and it would probably be beyond the reach of the poor man. Increasing supplies for the poor man will, therefore, depend on increasing the availability of preserved fish. Facilities for the supply of the requisites of fishermen and the mechanisation of country craft for which we have made provision in the Plan, should result in larger production and, therefore, increased availability of preserved fish.

24. There is considerable scope for improving the quality of preserved fish. Salt impurities result in large-scale spoilage. Useful work has been done in salt curing by the establishment of government curing yards. Fish cured at Government yards is generally more wholesome as it is prepared under more hygienic conditions and expert supervision. There is, however, scope for research to determine the best curing seasons and types of cure and the degree of purity and correct proportion of salt required for preserving the different varieties of fish. This research should be intensified. The government yards had become popular because salt was supplied free of excise duty for curing, but with the abolition of the excise duty the differential rate of salt has disappeared and in many areas the people are reverting to curing at private yards. There are only two ways of preventing them from doing so, namely : (1) subsidising the supplies of salt ; and (2) compulsion. Both of them may be necessary for some time. Salt supplies at the curing yards in Madras, Travancore-Cochin and Saurashtra are subsidized. The Madras State Plan provides Rs. 53·1 lakhs for salt distribution.

25. The margin between the producers' price and the consumers' price even in the case of cured fish is large. Any increase in producers' (fishermen's) margin of profit without raising consumers' price would largely depend on increasing the return per unit of effort by improving the efficiency of fishing operations and eliminating spoilage at stages preparatory to marketing. Reduction in consumers' price without depressing producers' margin would depend

on decreasing handling charges and retailers' margin. It is well known that in most fish markets in India handling is unhygienic and a considerable amount of wastage occurs. Regulation of markets and establishment of planned marketing premises are as essential for improving the quality of the marketed fish as for reducing costs and should receive high priority. Elimination of middlemen by co-operative marketing may bring about some reduction in handling charges as and when efficiency in operations is developed.

26. As large scale fishing operations develop, large catches will be landed at Bombay, Cochin and Calcutta ports on some days of a month when, as a result, conditions of glut may be created which may cause wide fluctuations in prices and, therefore, a feeling of uncertainty in the trade. This would depress prices in the producing centres and as a result the small fishermen would suffer. To protect the interests of the fishermen as well as the consumers the best course would be that the supplies at these three centres should be marketed through Co-operatives which should, so far as possible, also operate the ice factories and refrigeration plants. We suggest that the State Governments should take early steps in that direction and arrange for the training of adequate managerial staff for these co-operatives. Meanwhile fish marketing Boards consisting of representatives of fishermen, the trade, the consumers and the State Government may be established at these centres to regulate marketing.

THE FISHERIES PLAN

27. In working out the development programme outlined above we had to allocate certain priorities which were based on a balance of many considerations such as the nature of the fisheries, the availability of resources and technical skill, the present stage of development, the interests of small fishermen and lastly the need for immediate increase in production. For instance, in the maritime State of West Bengal emphasis has been on the development of inland fisheries for which there is very considerable and immediate scope. On the other hand, in Madras, Bombay and Travancore-Cochin the principal schemes relate to the development and expansion of marine fisheries. In the case of inland fisheries the priorities are the survey and stocking of new culturable waters and collection of fry. In the case of marine fisheries the priorities are—

(1) mechanisation of country craft or introduction of new mechanised boats ;
(2) harbour facilities ;
(3) supply of requisites to fishermen ;
(4) development of marketing ;
(5) provision of ice and cold storage and transport facilities ;
(6) introduction of mothership operations ; and
(7) provision for off-shore fishing with larger powered vessels such as purse-seiners and trawlers.

Based on these priorities the Plan provides for a total expenditure of Rs. 4·6 crores in addition to the provision under the Technical Cooperation Aid Programme. The fisheries programme will raise production from the present figure of 1 million tons to 1·5 million tons at the end of the Plan.

CHAPTER XXIV

VILLAGE INDUSTRIES

Village industries have a central place in rural development programmes. Diminishing opportunities for gainful employment account to some extent for the reduction in the standard of life of some sections of the rural population. Products of large-scale industries have increasingly limited the market for several classes of artisans. Their occupations now give them only partial employment, so that they tend to join the ranks of agricultural workers. Development outside the rural sector has not been rapid enough to arrest the increasing pressure of population on the land. The development of village industries should, therefore, be as much a matter of State action as the increase of agricultural production. Indeed, one cannot be separated from the other, for, increase in agricultural production presupposes fuller utilisation of the available manpower and release of surplus workers for other occupations. Village industries, therefore, call for programmes which will develop a great deal of local initiative and co-operation, and an economic environment in which they have a reasonable chance of succeeding. If the measures to be undertaken are to be effective in dealing with so difficult a problem, it is essential that they should be commensurate with its size and importance.

2. Village industries are concerned, in the main, with the processing of local raw materials for local markets and with simple techniques. The scope for such industries depends, in part, on their relation to the corresponding large-scale industry; in part, on the development of agriculture and the growth of rural amenities. As agriculture becomes more intensive, there will be greater demand for certain articles of consumption and tools and implements which could be met by village industries. Amenities in rural life such as supply of pure drinking water, street lighting, sanitation, hospitals, recreation grounds, community centres and roads increase the field for village industries. The possibility of turning waste i nto wealth, for instance, production of gas from cow dung and other refuse of the village through gas plants in so far as the operations prove economic, production of bone manure through bone digestors, soap making out of non-edible oils, etc., will further provide scope for the development of village industries.

3. We may refer here also to rural arts and crafts which have both social and economic significance. Village printing, embroidery and pottery and the crafts of tribal people, for instance, have not only a long tradition but have also been essential elements in the organic unity and culture of the villages. In any programme for the revival of village industries, these crafts which have suffered much from the economic development of the past few decades, will deserve special attention.

4. If village industries are to be developed, it is necessary to deal with the deficiencies which have led to their decline. These relate to (1) Organisation, (2) State policy, (3) Finance, (4) Raw materials, (5) Research, (6) Technical guidance, (7) Supply of equipment, and (8) Marketing.

ORGANISATION

5. So long as villages worked largely as self-sufficient units, goods and services were mutually exchanged within a group and there was a great deal of inter-dependence and identity of interests within the village. One effect of new large-scale industry and of imports was to reduce steadily the demand for the products of local artisans. It follows, therefore, that village industries have the best chance of growing on the basis of local demand, that is, increase in mutual exchange. The village organisation has to be rebuilt to suit changed conditions. It can hardly function now in the form of a loose organisation in which individuals work as largely distinct units; it has instead to function as a fairly compact unit. The exact pattern of the village organisation can only evolve after a series of experiments, but with assistance from the Government, the village should become capable to a large extent of discharging the obligation of providing employment to all the workers in the village, whether they are farmers, landless labourers or artisans. It is in this context that village industries become all-important in village development. They have, therefore, to become the concern of the village community functioning as an organised group. While artisans may form associations on the basis of single craft or multi-craft cooperatives, preferably the latter, carrying on operations connected with their crafts, they are likely to derive the maximum benefits in respect of finance, raw materials and demand for the finished goods if the village organisation takes upon itself the principal responsibility of developing village industries.

6. There are a number of institutions in India such as the All-India Village Industries Association, the All-India Spinners Association and the Khadi Pratisthan, Sodepur, which have a long record of valuable work and considerable experience in the field of village industries. In addition to organising industrial co-operatives, a useful method of developing village industries would be to give a measure of assistance to such associations so that, in turn, their workers can assist village artisans.

7. While organisation in the village provides the base, the development of village industries requires drive and direction from the Central and State Governments. The primary responsibility for carrying out programmes for village industries rests with State Governments, but in many aspects the framework within which they can execute programmes for individual village industries is set by the policies followed by the Central Government. In the Central Government, there is, therefore, need for an organisation which will give close attention to the problems of village industries and help to create favourable conditions for action by State Governments, constructive organisations and village Co-operatives. In view of the growing importance of the problem of employment, the Central Government must now give the same attention to village and small-scale industries as it has undertaken, in view of the shortage of food and raw materials, to give to agriculture.

8. The Central Government is shortly constituting a Khadi and Village Industries Development Board for executing programmes of khadi and village industries. Experience will indicate whether these two sets of industries should in practice be handled separately or together. The board is intended to be an organisation outside the departmental machinery of the Government and is to be composed of experienced workers in the field of *khadi* and village industries and a few representatives of the Central Government. Some members of the board might devote their entire time towards its work, some only part of their time. The board would be responsible for preparing and organising programmes for the production and development of khadi and village industries, including training of personnel, manufacture and supply of equipment, supply of raw materials and marketing, research and study of the economic problems of different industries. The board would also be in executive charge of village industries schemes suggested later in this chapter. New schemes for village industries, for which assistance may be needed from the Central Government would also be considered by the board. The board is expected also to function as a clearing house of information and experience relating to the progress of cottage industries. Training programmes too would be within the purview of the board.

9. In the States also there is need for similar organisations working in collaboration with the Central organisation. In Bombay, for instance, there is already a Village Industries Committee which consists of experienced social workers and has executive responsibility for certain industries for which the funds are provided by the Government. In many States there are Cottage Industries Boards, but these function as a rule in an advisory capacity. This factor limits their value considerably. In addition to any non-official organisation that may be proposed, it is essential to have well-staffed departmental organisations as well. At present village industries do not receive as much attention from State departments of Industries as they require. The arrangements in any State will depend upon its own requirements and the nature of the industries for which the State Government has to provide. For instance, in Uttar Pradesh, there is a separate Director of Cottage Industries. On the other hand, in Bombay, where the role of industrial cooperatives has been emphasised, there is a separate officer designated as Joint Registrar of Industrial Co-operatives and Village Industries.

State Policy

10. A programme of village industries, such as is suggested later in this chapter, has to be supported both by specific measures of assistance as well as by appropriate State policy. In addition to the emphasis on technical improvements, research and other measures for improving efficiency, the primary objective of policy should be to provide a field within which each cottage industry may be able to organise itself. Wherever a large-scale industry competes with a cottage industry, the appropriate course to adopt would be to try and formulate a common production programme. In preparing a common production programme, account would have to be taken of the factors determining the efficiency of large-scale and small-scale production, the scope for development through small-scale methods, the extent to which the

social aspect has to be emphasised and the value of any particular course for increasing rural employment. The aspect of employment will naturally receive special emphasis in considering the details of any common production programme. Common production programmes, which included cottage industries within their scope, have necessarily to be worked out in general terms, because these industries are still more or less unorganised. Gradually, however, as organisation develops, the programme for cottage industry could be integrated more closely with that for a corresponding large-scale industry. In addition to a determination of the overall conditions of supply and demand one or more of the following elements may enter into a common production programme for the related large-scale and small-scale industries—

(1) reservation of spheres of production ,
(2) non-expansion of the capacity of a large-scale industry ,
(3) imposition of a cess on a large-scale industry ,
(4) arrangement for the supply of raw materials , and
(5) co-ordination for research, training, etc.

A common production programme for an industry necessarily implies a measure of control by the Government, especially over the organised side of the industry. The subject is considered further in the following chapter.

11. The general principle underlying common production programmes can, as a rule, be applied only after detailed study and investigation with reference to the conditions of a particular industry. What is certain is that unless the planning and development of village industries and many small-scale industries is conceived as part of the process of formulating policies and programmes for the related large-scale industries, it will be extremely difficult to promote the smaller industries and almost every technical and economic factor will weigh against them. Reservation of spheres has, for instance, been already attempted on a small-scale between the organised textile industry and handloom weavers. In view of the unemployment which has become a fairly constant feature of the handloom industry, there is scope for the extension of this principle. The principle can also be applied to a number of other industries. For instance, in the oil industry the policy could be adopted of developing the production of edible oils through the village industry and the production of non-edible oils through oil mills.

12. In the sphere of food processing industries the stage appears to have been reached when further expansion of large-scale industry should not be permitted, except under certain conditions such as, for instance, establishment of a unit by the government or by a co-operative organisation. Rural employment has been affected directly by the growth of privately owned units in this field. For example, in the paddy growing areas rice pounding was always a substantial source of employment, both whole-time and spare-time, especially for women. The recovery of rice from paddy by hand processes was also satisfactory. The introduction of rice mills of the huller type greatly diminished this employment and was also wasteful in various ways. It appears to us that in the interest of rural employment and to ensure better nutrition, the Government should now formulate a programme for replacing the huller type of rice mills by organised hand-pounding of rice.

13. The imposition of a cess on a large-scale industry for the benefit of the corresponding cottage industry may have two objects. The first object may be to equalise the difference in their costs of production. We believe that the scope for the imposition of a cess for achieving this object is limited and, in any event, such a measure should only be taken after careful investigations by an appropriate body. On the other hand, if the problems of the large-scale industry and the cottage industry are viewed in terms of a common production programme and it is recognised that improvement in the efficiency and growth of the cottage industry are basically in the interest of the development of the industry as a whole, it is legitimate to suggest that the organised sector of the industry may provide, by means of a small cess, the means for promoting technical improvement and organisation in the weaker and the unorganised sector. It is for this reason that the Central Government has recently decided to impose a cess on all mill-made cloth so as to raise funds for the development of the khadi and handloom industries. On similar grounds, we recommend the imposition of a small cess on mill oil for the benefit of the village oil industry.

14. The Government is directly in a position to assure the supply of raw material for the cottage industries only in those cases in which it is itself in control of it. It, therefore, follows that in industries in which a common production programme is adopted or is considered necessary for the related large-scale and cottage industries, either a suitable machinery of control over the raw materials should be maintained, or some other arrangements to ensure the supply of raw materials should be made. The outstanding cases of distribution of a controlled raw material by the Government is of course yarn for handloom weavers. The difficulties are no doubt greater where the raw material is an agricultural commodity which is not subject to procurement. In such cases, the only means at the disposal of government can be supply of finance and, when this course is justified, resort to requisitioning.

Research and Training

15. While it is essential that village industries should receive the maximum support in terms of State policy and specific assistance from the Government, these measures cannot have more than short-term value unless the techniques of cottage production improve rapidly. The utmost importance must, therefore, be attached to arrangements for research and training in village industries. There are a number of institutions already engaged in research in the problems of village industries but, by and large, they are not adequately equipped and staffed, their programmes are not co-ordinated with one another and, so far, their problems have not become actively linked with research work in the National Laboratories. One of the first results of an intensive programme for the development of village industries will be to bring to light the problems on which research is most needed. Some of these problems are already known. For instance, in the direction of improved tools, the need has been felt for suitable hand-ginning machines, delinting and decorticating machines for cotton seed, better hand-carding machines, improved spinning machines, a small carbonising machine for removing vegetable matter from indigenous wool etc. Similarly, for paddy husking, improved implements are needed for reducing the proportion of broken rice and for separating unhusked

paddy. Some work has already been done on improved types of oil presses. Another field in which, for want of research and adaptation the artisan is being steadily reduced is that of village pottery. In addition to tools and implements which are operated by hand or foot, there is need for evolving machines worked by power which may be suitable for small-scale operations. The prospect of rural electrification in several parts of the country during the next few years emphasises the importance of investigations of this kind.

16. These illustrations suggest the need for an institute for village technology which could carry out investigations into problems of small industries, especially those pointed towards rural areas. Such an institute could itself try out new ideas, adaptations and designs and indicate directions in which artisans could be trained and guided. The institute would have to maintain close contact, on the one hand, with the existing organisations in different parts of the country and, on the other, could present problems to the National Laboratories and other centres of advanced research. It could also communicate its experience and results to the smaller research centres and to artisan groups in different parts of the country. The proposal has to be worked out by a group of experts. We suggest that the proposal for an institute of village technology should receive high priority in the Central Government's programme for the development of village and small-scale industries.

17. In the past there was no organised system of training for village artisans. For the greater part, crafts were chosen on the basis of caste, and skills were passed on from one person to another. These methods proved inadequate against the competition which village crafts had to face, so that new products came into the village market and tended to replace the old. With tools of new types coming into increasing use, for instance, in agricultural operations, the demand for the services of local artisans has further diminished. Training programmes have now to be organised on a large scale if the process of adaptation on the part of village artisans is to be expedited. For many years State Governments have relied on demonstration parties and peripatetic parties for achieving this result. It has been found that demonstration parties are unable to provide continuous guidance. On the other hand, peripatetic parties, which give longer training, are unable to maintain any system of follow-up after they have imparted training. In Uttar Pradesh a system of training-*cum*-production centres known as 'tuitional classes' appears to have yielded useful results. In these centres training is provided under normal working conditions side by side with trained artisans who work either as instructors or as employees. Another recent development in Uttar Pradesh which deserves study relates to the establishment of pilot workshops for training village blacksmiths and artisans in the more advanced skills such as smithy, tin work, casting, etc. New types of machines which are gradually finding their way into the villages are also repaired at these workshops so that the artisans trained by them enter the field with much greater ability to hold their own and to develop their crafts than the ordinary type of village artisan. With better training arrangements, it might also become possible to arrange for the manufacture of standard tools and equipment for work in the villages.

FINANCE

18. Village artisans have scarcely any financial resources of their own, nor have they any security to offer. They produce mainly for local demand and, if they manufacture for a market outside the village, finance is generally found by some middle-man. Finance for the development of village industries has to be viewed as a problem inseparable from finance for agriculture. The formation of industrial co-operatives is essential if the Government and the co-operative movement are to be able to render substantial assistance to village artisans. Given the necessary organisation, it should not only be possible to extend financial assistance, but also to initiate organised development programmes and, if need be, in the process, to assist co-operative societies which lend money through guarantees and in other ways. The operations of State Governments under legislation relating to State aid for industry have not touched village artisans to any extent. These again depend upon the existence of suitable organisations such as industrial co-operatives being available. With the establishment of Industrial Finance Corporations in different States—a process which itself should be hastened—it should be possible to render much greater assistance to village industries, if departments of industries and rural extension workers give special attention in the immediate future to the organisation of industrial co-operatives in villages.

19. While the development of co-operative organisations has to be expedited to the maximum extent possible, in the immediate future the responsibility for revitalising village industries devolves upon the Central and State Governments. In the States the Five Year Plan makes a total provision of Rs. 12 crores for cottage and small-scale industries which represents a doubling of the level of development expenditure in this field prior to the Plan. Realising that the resources of the States have to be substantially supplemented if the progress is to be at all commensurate, in the plan of the Central Government a total provision of Rs. 15 crores has been made. In undertaking programmes for village and small-scale industries, finance is perhaps not the major obstacle. Organisation, both on the side of the Government and on behalf of artisans and the determination of fields of work in which small-scale operations can be sustained continuously raise the more difficult problems.

VILLAGE INDUSTRY PROGRAMMES

20. We summarise below the programmes which have been drawn up by the Planning Commission in consultation with a number of experts, for the following village industries :

(1) village oil industry ,
(2) soap-making with neem oil ,
(3) paddy husking ,
(4) palm gur industry ,
(5) gur and khandsari ,
(6) leather industry ,
(7) woollen blankets ,
(8) high-grade hand-made paper ,
(9) bee-keeping , and
(10) cottage match industry.

It is proposed that the Khadi and Village Industries Board should take further action on these programmes in consultation with State Governments and other organisations engaged in the field of village industries. The programmes have been prepared on the basis of a period of four years being available for their implementation.

(1) *Village oil industry*—The programme for this industry envisages a common production programme for village oil presses and for oil mills. The production of ghanis is proposed to be raised from 10 to 13·8 lakh tons of seed pressing. This will involve some diversion of seeds now pressed by mills and substitution of them by cotton seeds. It is suggested that 1,200 village oil centres, each serving a group of 40 to 50 villages and about 50 village oil presses may be organised. Inefficient types of village oil presses are to be replaced by efficient types. A research and training institute and five regional training centres are proposed for training artisans in the manufacture and repair of improved oil presses and for generally improving the efficiency of the village oil industry. Apart from giving greater employment to village artisans, this industry is expected to improve the nutrition of the rural population by supplying fresh and pure oil which has become difficult to obtain owing to the widespread practice of adulteration in the mill oil.

(2) *Soap-making with neem oil*—This is a small scheme, the main object of which is to utilise material now going waste. The scheme aims at establishing production-cum-demonstration centres in different States where neem oil will be produced and utilised in soap manufacture. It provides for 11 neem units, each unit consisting of 1 soapery and 7 neem pressing centres producing a total of 1260 maunds of neem oil and utilising it for the production of about 78 tons of soap per year.

(3) *Paddy husking*—Hand-pounding of rice is an important village industry even to this day. It processes about 65 per cent of the paddy, the mills processing the remaining 35 per cent. The programme aims at improving the hand process for increased recovery of rice and production of bran in a pure form by the introduction of paddy husking stone chakkis in place of the pounding method. It is recommended that over a period of four years the distribution of about 50,000 chakkis in rice pounding areas might be subsidised. Research is proposed to be carried out for evolving suitable implements for paddy husking such as paddy separater, a better type of chakki which can reduce breakage etc. It is also proposed that rice mills of the huller type should be gradually eliminated.

(4) *Palm gur*—The scheme for the development of palm gur envisages increase in production to the extent of about 80,000 tons of gur. This will afford employment to about 60,000 rural workers. The scheme provides for training and research and an element of subsidy may also be necessary.

(5) *Gur and khandsari*—These are well-established village industries. The object of the programme is to extend the use of improved types of cane crushers to obtain a higher percentage of extraction. It is proposed that over a period of four years about 100,000 improved cane crushers should be introduced. The introduction of small centrifugals for the manufacture of khandsari is also suggested.

(6) *Leather*—The object of this scheme is to minimise waste due to the incomplete utilisation of dead animals. The four-year programme provides for recovery work, tanning, leather craft in municipal areas and in adjoining rural areas and also for the organisation of co-operatives of village leather workers.

(7) *Woollen blankets*—It is proposed that four wool spinning and weaving centres may be established for developing hand-spinning and hand-weaving for the production of woollen blankets required by the defence services. The centres may be run by State Governments or by co-operatives. It is suggested that carding and finishing should be done by machinery operated by power, but the spinning and weaving should be done by hand.

(8) *Hand-made paper*—The programme suggests the production at 11 existing centres of the varieties of high-grade hand-made paper which are at present imported. These centres should be assisted in respect of equipment, training and research. Pulp-making is proposed to be done by power-operated machines, while other processes will be done by hand.

(9) *Bee-keeping*—The intensive development of bee-keeping is proposed in selected areas in States in which the industry has already made some progress, for instance, Madras, Bombay, Uttar Pradesh, Punjab, Mysore, Travancore-Cochin and Coorg. In each selected area there may be a sub-station serving a group of 20 to 30 villages. The scheme provides for training of staff and bee-keepers and for supply at subsidised rates of bee-hives and other appliances. Co-operatives of bee-keepers are envisaged in each sub-station for collecting and marketing of the honey produced by the members.

(10) *Cottage match industry*—The scheme aims at increasing the production of the cottage match industry from about 0.6 million gross to about 1.8 million gross at the end of four years. This result is to be achieved through provision of training and certain concessions as also financial assistance to cottage match manufacturers.

(11) *Khadi*—Certain tentative proposals for the khadi programme have been prepared, but these have to be considered by the proposed Khadi and Village Industries Board.

(12) *Coir*—The depressed state of the coir industry in Travancore-Cochin calls for special action for the reorganisation of the industry on co-operative basis. A programme for this purpose has been indicated in the State Government's Five Year Plan.

18. An illustrative statement summarising the programmes for the village industries mentioned above, other than khadi and coir, is given in the Appendix. It is expected that finance for the village oil industry and soap-making from neem oil will be found by means of the cess mentioned earlier and for the remaining industries assistance will be extended to the States by the Central Government from the allotment for Rs. 15 crores made in the Five Year Plan.

APPENDIX

Summary Statement Showing Production, Expenditure and Employment in Selected Village Industry Schemes

Serial No.	Industry	Total Production	Additional production	Expenditure (Rs. lakhs)	Rough estimate of employment
1	2	3	4	5	6
1	Village Oil Industry	...	3·16 lakh tons oil (2·6 lakh tons @ 5 tons per improved ghani and 0·56 lakh tons @ 0·85 tons per ghani).	233·1	1,00,000 organisers, mistries, oil pressers.
2	Soap making with neem oil.	3448 tons soap	3448 tons soap	18·1	300 employees and part time work of seed collection for others.
3	Paddy husking	2 lakh tons	...	10·0	40,000 hand pounders.
4	Palm Gur	2,53,252 tons of palm gur.	81,852 tons of palm gur (recurring additional annual production after 4 years will be 40,943 tons).	100·0	60,000 agriculturists, tappers, etc.
5	Gur and Khandsari	(*a*) 450 lakh mds. of improved ordinary gur. (*b*) 5·1 lakh mds. sanitary gur. (*c*) 1 lakh mds. cream coloured jaggery. (*d*) 13·6 lakh mds. khandsari.	Net gain through (in Rs.). (1) better extraction 4 crores ; (2) improving quality 2·60 crores. (3) better marketing 1·60 crores. Total—8·20 crores.	100·4	1200 whole-time workers 3800 part-time workers 4600 local honorary workers, 600,000 cane-growers in 30,000 villages for part of the year.
6	Leather Industry	Hides, bones, tallow, Indigenous footwear.	Increased production of hides, bones, tallow due to greater recovery from dead animals. Production of better footwear.	160·4	1200 employees including 900 tannery flayers etc., also about 8 lakhs chamars in 72,000 villages.
7	Woollen Industry	10 lakh blankets	10 lakh blankets	47·5	200 employees ; 4000 spinners, 200 weavers.
8	Hand-made paper Industry	1400 tons high-grade hand-made paper, valued at Rs. 54 lakhs.	1400 tons high grade hand-made paper.	18·9	1000 paper makers.
9	Bee-keeping	...	...	16·3	150 apiarists and fieldmen ; bee-keepers forming co-operatives.
10	Cottage Match	...	1·8 million gross	20·6	3000 student workers 6000 labourers.
			TOTAL	725·3	

CHAPTER XXV

SMALL INDUSTRIES AND HANDICRAFTS

It is customary to refer to industries which are not required to be registered under the Factory Act as cottage and small-scale industries. There is no accepted line of distinction between cottage and small-scale industries and different definitions are adopted according to the object in view. The distinction frequently made between establishments which employ power and those which do not become less useful as electricity becomes more generally available. The number of workers employed in an establishment has only a limited value as a criterion for distinguishing large-scale and small-scale establishments. In addition to the test of numbers employed and the use of power, a further test may be whether a unit which may otherwise be regarded as small is owned by the worker himself or by a co-operative group. In implementing programmes which involve concessions or assistance for small-scale industries, the approach has to be flexible and it may frequently be necessary to evolve some practical criteria according to the aims in view which might be appropriate to the circumstances of each industry or group of industries.

2. In the preceding chapter we have considered the problems of those small industries which are, in the main, an integral part of the village economy. In this chapter we refer to the problems of the remaining small industries. These could be divided into two main groups, namely, those which represent traditional skills and crafts and those which are more recent and have an intimate connection with the corresponding large-scale industries. Village industries are at present of a rudimentary character but, with the progress of rural electrification, their character is likely to be transformed. Employment is as weighty a consideration in small industries and handicrafts as it is in village industries and in both it is of the utmost importance that the process of technical improvement should be hastened. Along with measures to create or maintain demand for the products of small industries, equal emphasis must be placed on the need to change methods of production and organisation.

3. Small industries derive part of their significance from their potential value for the employment of trained and educated persons. The field of public employment which a large proportion of those who receive education seek to enter is limited ; so also is the employment that may be available in large-scale industries or in allied fields. For those who have received some training and education, generally speaking, the most promising direction of activity appears to be the development of the smaller industries. Further, both small industries and handicrafts have great importance as means for providing employment for women in their homes as well as on a more organised basis.

4. During recent years a great deal of development in the field of small industries has taken place. During the war, for instance, new small industries sprang up throughout the country for the purpose of meeting defence requirements. A number of these have now disappeared wholly or partially. For this there may be several reasons. In some cases the difficulties may relate to the supply of raw materials or to the existence of capacity in excess of demand ; in others, the fact that the units are uneconomic or are unable to produce the quality or precision needed may account for their failure. Nevertheless, the experience of numerous small industries growing up during the war and manufacturing products which still continue to be obtained from other countries has significant lessons in the context of programmes under the Five Year Plan.

5. The information available on the subject of the existing small industries is extremely meagre. A large-scale sample was carried out recently by the National Sample Survey, but its results are not yet available. While surveys of individual industries or individual centres of small industry are available, often the information they furnish is not recent enough and does not throw sufficient light on the problems of an industry as a whole. The result is that there has been far too little formulation of policy on the subject of small industries, and executive action has been largely confined to such activities as the provision of power or the distribution of controlled materials. There have been hardly any considered and co-ordinated programmes of development and technical improvement, and a great deal of small industry has grown up without much direction and assistance from the Government. The growth of small industry over the past two decades has been an unplanned process which has been lacking in some of the elements that make for efficiency and stability. The planned development of small industry is a task of immense magnitude, of equal importance with the planning of agriculture or transport or industry. This task has been taken in hand by the Central Government and, as a first step, programmes for a few selected industries such as wool development, the manufacture of woollen goods, sports goods, brassware and bell-metal, artistic glassware etc., are under preparation in co-operation with the States concerned.

6. In this Chapter an attempt is made to indicate some of the problems which are involved in formulating substantial development programmes for small industries and handicrafts and the directions in which, both at the Centre and in the States, action has to be taken. In this field, the work of the Central Government as well as of the States is still in its preliminary stages. The Central Government's plan contains a total provision of Rs. 15 crores from which it should be possible to finance approved programmes and to render a fair measure of assistance to the States. Programmes for small industries and handicrafts call for a comprehensive approach in which, on the one hand, there is adequate co-ordination with large scale industries and research institutions and, on the other, the State Governments ensure that the artisans are sufficiently organised to be able to avail of technical and financial assistance and to provide as far as may be possible co-operatively for their essential requirements.

HANDICRAFTS

7. Skilled craftsmanship is the principal feature of handicrafts. For the greater part trade in handicrafts is in the hands of the middlemen, many of whom have been associated with handicraft production for generations. As a rule, these middlemen operate on a small scale and work to orders. They find their own finance and constitute a real link between the artisans, the exporter and the foreign buyer. There have been instances of improvement effected at the instance of these middlemen but by and large, the present organisation of handicraft industries does not make for efficiency or for improvement in quality or adherence to standards or, for that matter for planned increase in production. Nor are the middlemen in a position to ascertain sufficiently the requirements of foreign markets. The result is that, with some exceptions, the handicraft industries remain largely static in their methods and outlook.

8. There are numerous problems concerning handicraft industries which need close study and investigation. Some of these are known, but systematic enquiry is necessary if action on the part of the Government and scientific institutes is to be properly directed. A few of the problems which affect the volume and character of the export trade, which is undoubtedly an important element in their production. The measures which are calculated to increase the export demand as also likely to enlarge the internal ma[illegible]could be mentioned by way of illustration. The foreign demand for brassware products from Banaras, Moradabad, Jaipur and Tanjore could be increased if more utility articles were manufactured and their shapes adapted to the requirements of customers. Similarly, uses of brocades and gold thread *saris* and other articles manufactured in Banaras could be greatly developed if the tastes of foreign buyers and the character of their needs were studied more closely and the necessary guidance passed on to artisans. The recent slump in the coir industry, which is no doubt due in part to exchange restrictions, is also to be traced to the decline in quality, lack of adequate organisation and failure to adapt production to market conditions.

9. These illustrations show that in the case of handicrafts there is an intimate connection between measures needed to improve production and supply and those required for stimulating demand. The internal demand for products of handicrafts is limited mainly by the low purchasing power of the population but, through the extension of State patronage in its various forms and greater emphasis on the use of indigenous handicraft goods in the home and elsewhere, the demand can be greatly extended. The external demand in many markets has varied considerably in recent years on account of exchange restrictions and the fact that a number of handicraft products fall under the description of non-essential goods. In markets like the United States where this difficulty does not exist, the demand for Indian handicrafts could be developed much more if certain minimum conditions could be fulfilled by the suppliers. Complaints are not infrequently made that in supplying goods samples are not adhered to and the quality varies a great deal. Lowering of quality cannot but affect future orders. Secondly, for a large market like the United States goods are required in bulk, but the middlemen who arrange for production in India are not able to finance more than a limited quantity of goods. Production programmes for handicrafts goods should be based on the study of the require-

ments of customers in foreign markets, not only of the wealthy but, increasingly, of the average citizen. In other words, as suggested earlier, in addition to meeting luxury demands for artistic wares, the utility possibilities of handicrafts should be developed as fully as possible.

10. In improving the quality of handicraft products and in increasing the demand for them emporia can also play an important part, provided they are efficiently organised. Emporia should not only increase the sale of cottage industry products but should, in turn, be the means of conveying to artisans information and guidance concerning new demands and new designs. A direction in which useful results are likely to be secured is the linking up of consumers' co-operatives with producers' co-operatives. To the extent such a development can take place. a stable internal demand can be created for the products of small industries and handicrafts. Similarly, in the sphere of foreign trade the Central and State governments could attempt increasingly to promote links between the producers in India and large buyers abroad.

11. The Central Government have recently constituted a Handicrafts Board to advise the Government generally on the problems of the handicraft industries, particularly with a view to improving and developing production and promoting sales in India and abroad. The board would also advise the Government on grants or loans to State Governments and private organisations and institutions for financing activities necessary for the development and improvement of handicrafts. The purposes for which grants or loans may be recommended by the Board may include introduction of better technique and improved equipment, prescribing standards of quality and arrangements for their enforcement, training of personnel, promotion of research, publications on cottage industries, procuring and supply of raw materials for handicrafts, setting up handicrafts museums and conducting economic surveys, etc.

12. Not all handicraft production takes place in such established centres as Benaras, Mirzapur, Farukhabad, Jaipur, Hyderabad, Tanjore or Srinagar but, since skills in handicrafts are imparted by one craftsman to another, the growth of traditions and, consequently, of a measure of concentration is a fairly common phenomenon. The craftsman or the artisan himself works on a small scale and independently of others. As a rule, despite the fact that many craftsmen in the same trade may be working near one another, their common problems are seldom taken care of by a representative association, nor have many co-operatives been formed. If the artisan is to become less dependent on middlemen and technical knowledge and guidance are to be carried to him, the two lines of advance have to be: (*a*) formation of co-operatives and (*b*) formation of associations in each established handicraft centre with co-operatives as well as individual workers as members. The work of organising co-operatives is a responsibility of the industries departments in the States with the assistance, where necessary, of the co-operative departments. Some progress in this direction has already been made. For instance, taking all the States together the number of industrial co-operatives rose from 3,758 in 1949 to 5,305 in 1950 and, according to the current schemes of State Governments, it is expected to rise to about 8,000 by 1955. If it is remembered that not all these co-operatives are concerned with handicrafts and that their total membership is less than half a million, the need for accelerating programmes for organising artisans and craftsmen into

co-operatives will be readily appreciated. As regards the formation of associations in established centres of production, the essential object is to create well-organised agencies through which assistance by way of materials, equipment, technical guidance, new designs, etc., can be taken to the home of the craftsman.

13. The industries departments in the States, even with such assistance as the Central Government can provide, will not be able to organise the production of handicrafts on the lines suggested above and, in due course, to replace the middlemen by co-operative associations, unless they are themselves equipped with the necessary knowledge and are in continuous contact with the technical and business problems of the producer and the artisan. In addition to finance and organisation, there are three directions in which research and investigation are needed. In the first place, standards for quality control should be established for all important lines of production. Enforcement of these standards will have to be undertaken as the associations mentioned above develop their marketing functions and through rules governing State purchase. Export trade also represents a field in which quality control can be enforced successfully, at any rate, for the major products. Secondly, the study of designs and materials needs to be organised. There is too little work in this direction at present, although in arts and crafts schools and elsewhere valuable experience exists which could be brought together and further developed. In respect of designs in particular, the country has scarcely begun to explore its own rich heritage. In the third place, there are no adequate arrangements at present for either discovering the technical problems which hamper the work of the craftsman or for solving them where they are known.

14. Research in handicrafts involves study of art, skill and tradition as well as the study of materials. The former have necessarily a local colour. For this and other reasons it is necessary to develop in different parts of the country a number of institutions in which research in some aspect or other of handicraft production is undertaken. The Central Government might also consider the possibility of establishing a central institute for the study and preparation of designs. Such an institution could work in co-operation with arts and crafts schools, institutions like Shantiniketan and industries departments in several States.

SMALL INDUSTRIES

15. The expression 'small industries' includes many newly organized industries which are worked with power, as well as some of the older industries such as handloom weaving, manufacture of locks, utensils etc. In the organization of the newer small industries, the middle-man trader has a less prominent part than in the older industries. A higher level of technique demands a higher level of training and, therefore, the newer small industries open out a most promising field for the educated young man who is prepared to make his way on the strength of his own skill and enterprise. In the organization of these industries, the State can give even greater help than in the older industries, because their planning is a part of the planning of the corresponding large-scale industries and also because it is possible for the Government to locate the new industries in a planned manner.

16. Apart from the distinction between the old and the new, small industries may be divided into three groups, namely,

(*i*) those in which small-scale production has certain advantages and is not affected by large-scale industry to any great extent.

(*ii*) those in which small-scale industry is concerned with the manufacture of certain parts or with certain stages of production in a manufacturing process in which the predominant role is that of large-scale industry and,

(*iii*) those in which small-scale industry has to meet the competition of the corresponding large-scale industry.

The three types of industries could perhaps be described respectively as industries which exist independently or as units integrated with or as units competitive to large-scale industries.

17. Among the examples of small industries which are largely able to hold their own may be mentioned the manufacture of locks and padlocks, wax candles, buttons, *chappals* and badges. In these industries, while work may be done on an individual basis, it has to be organized through groups primarily to facilitate sale and marketing and the financing of production. To the extent to which such articles enter into State purchase, it is possible directly to promote improvement in quality.

18. In the engineering industries, there is considerable scope for allocating to small-scale production particular stages in the process of manufacture. Among the leading examples of this type of small industry may be mentioned the manufacture of cycle parts, electrical goods, cutlery, pottery and agricultural implements. During the war the smaller engineering units achieved valuable results but, subsequently, the shortage of iron and steel and their own weakness in organization have hit many of them. With improvement in the supply of pig iron and iron and steel generally, for which the Five Year Plan provides, it is expected that these industries will have an expanding field. This result cannot, however, be achieved without a reservation of spheres according to some central plan for an industry as a whole, supported by considerable assistance in finance, organisation and training on the part of the Central and State Governments.

19. Of the third type, namely, those which are seriously affected by competition from large-scale industry, the best example is the handloom industry. In 1951 it was reckoned that there were 3 million handlooms at work, in addition to about 23,000 power looms. Power looms are a comparatively recent development, which has brought to the fore the question of competition between the more advanced and the less advanced forms of small industry. This is a different problem from the competition between a large-scale industry and the corresponding small-scale industry. The entire subject of 'protection' for the handloom industry in relation to the textile industry is being reviewed by a committee which has been appointed by the Central Government. However, as an urgent interim measure for the relief of the industry the principle of reservation in favour of the handloom weaver has been recently extended. The importance of ensuring an adequate market for the handloom industry is well recognised. This is also required for the plan for the textile industry which postulates an increase

f handloom production from 810 million yards in 1950-51 to 1700 million yards by 955-56.

20. It will be seen, thus, that both for those small industries whose production has to be ntegrated with and form a part of the production of the large-scale industry as well as for hose which have to be 'protected' in relation to the large-scale industry, policy has to be based n the premises that there should be a common production programme for an industry as a vhole, including both the large as well as the small-scale units. /The nature of the common roduction programme would of course have to vary with each industry. In some cases, as xplained in the chapter on village industries, the essential points are that the supply of the asic raw-materials should be assured, a sphere of production earmarked and perhaps a small ess enforced on the large-scale industry, either with a view to reducing the difference in the ost of production or merely with the object of providing funds for improving the efficiency and rganisation of small-scale units. In other cases, a common production programme takes the orm of a closely integrated programme in which the large and the small units are essentially omplementary. The principle of reservation of a sphere of work is implied in both cases.

State Purchase

21. Apart from the field of production for any small-scale industry which may be specified y a common production programme, there are two directions in which the demand for products f small industries could be deliberately developed. These are : (*i*) stores purchase and (*ii*) eplacement of imports. The question of stores purchase has been the subject of a recent lecision by the Central Government. It has been agreed that where basic considerations like uality, delivery date etc. are comparable, the products of cottage and small-scale industry would receive preference for the requirements of the Governments over the products of other nanufacturers. In those items in which cottage industry has advantages over large-scale ndustry or has established itself as a supplier to government on competitive terms, orders should be placed with cottage and small-scale industry to the fullest extent before orders are given to large-scale industry. In the case of other products, according to the circumstances and merits of each case, a price advantage and suitable relaxation as regards specifications would be allowed./ It has also been provided that preference should normally be given only to offers made by cottage and small-scale industry through a co-operative society or through agencies approved by the Central Ministry of Commerce and Industry in consultation with State Governments. While, over a period, this stipulation will encourage the growth of co-operative organisations, in order to extend immediate support to small industry, it has been further agreed that price preferences would not be withheld from cottage industry products on the ground that purchases were made from a middle-man, provided that the middleman is a traditional employer, for instance a 'master weaver' or a 'master cobbler'. These decisions embody a considerable advance in policy and we suggest that they should be followed by those States which have not already adopted such a policy. /It is important, however, that there should be machinery for the enforcement of these decisions and for reviewing their working from time to time. If it is carefully employed, the stores purchase policy can be both a method of encouraging cottage industry and a means for raising its technical efficiency and improving its organisation.

Replacing Imports

22. A preliminary study of the possibilities of replacing by cottage and small-scale production articles which are now imported, has been made, but we suggest that the subject requires detailed examination by panels of technicians and businessmen in different trades. Such examination should be taken in hand and completed as a matter of priority. These panels could work out in detail the directions in which imported articles could be substituted and the stages in which the programme of production by cottage and small-scale industries could be organised.

New Centres of Small-Scale Production

23. The scope for initiating the production of articles in replacement of those imported is likely to be most considerable where the Government has the opportunity of organizing new centres of small-scale production. Thus, for instance, for the rehabilitation of displaced persons, especially those who had non-agricultural occupations or interests, it has been necessary to establish important townships such as Nilokheri, Faridabad, Phulia, Gandhi Dham etc. In the Punjab, new industrial areas have been added to a number of towns and, besides the provision of sites and the necessary social amenities, power has been made available. Independent artisans and small-scale entrepreneurs are being assisted with finance and technical guidance to establish production in selected lines. Among the community projects recently initiated there are a few, especially in West Bengal, in which the establishment of towns of local industries constitute the principal programme. In community projects of the rural type also, some provision has been made for the promotion of arts and crafts.

24. From these examples it would be apparent that by far the most important method of developing small-scale industries is to establish either new townships or, what might frequently be even more advantageous, to extend existing towns and provide sites, services, power, etc. It is hoped that from the funds provided in the Plan for cottage and small-scale industries, community projects as well as under certain other heads, it would be possible to promote and assist a number of centres for small industries. In the river valley projects, particularly when power becomes available, development of this kind will have a great deal of importance. The creation of such centres of industrial production is a development of such importance for the economy that if the programmes require additional financial provision in the later stages of the Plan, we recommend that this should be considered. It should be added, however, that progress in establishing new centres for industries is likely to be impeded, not so much by lack of finance for establishing them, as by the lack of capital for those who have to establish the enterprises, failure in marketing arrangements and by inadequate training of workers. The problems of marketing are already proving a source of anxiety in some centres which were started in connection with the rehabilitation of displaced persons. Frequently, acute problems of marketing develop because (*a*) in laying down lines of production sufficient study is not made of the prospects of future demand and (*b*) there is no overall planning in terms of common production programmes between large-scale and small-scale units. There are, therefore, dangers which have to be considered carefully in advance by the Government concerned before new industrial centres are established.

TRAINING

25. The question of training has received considerable emphasis in the Five Year Plan. The training centres maintained by the Central Government under the Directorate General of Resettlement and Employment have trained during the past few years 144,000 persons. The Ministry of Rehabilitation has so far arranged for the technical training of 52,000 persons from West Pakistan and at present 12,000 persons are under training, in addition to 8,000 trainees from East Pakistan. The plans of the State Governments provide for the following training programmes :

State Programmes of Training

	1950-51	1955-56
Number of industrial schools . . .	365	456
Number of pupils trained . . .	14,750	21,797
Number of technical and vocational instiautions	260	407
Number of person trained	26,702	42,997

The Central Ministry of Education has also provided for substantial assistance to technical institutions engaged in imparting more advanced training. Technical training programmes should be so designed that they fit in with the overall plan for the development of village and small-scale industries in the country. The training should be directed towards those trades in which the prospects of stable employment are reasonably clear. There is need also for considerable emphasis on the training of artisans in the existing small-scale industries. Exhibitions of village and small-scale industries which are valuable in stimulating demand should also be utilised for providing instruction concerning new techniques and designs to artisans.

26. *Research.*—The importance of research for the development of village industries and handicrafts has already been stressed. Small industries of the modern type have their own problems of research which can only be solved in close collaboration with the larger industries to which they are related. We suggest that the Central Government should arrange, in consultation with the State Governments, for the opening of special research sections for small industries in research institutes associated with individual large-scale industries. Where necessary, a measure of assistance could be afforded to enable an institution to expand its facilities. In view of the variety of problems which small industries of the modern type are likely to raise, it is doubtful if a single research institute will be sufficient.

27. *Finance.*—We have referred already to the need for finance. One suggestion may be made. Some States are likely to find it difficult to establish industrial finance corporations of an economic size because of their small resources or the undeveloped state of their industry. We suggest that the Central Government should consider the possibility of making regional arrangements for the establishment of industrial finance corporations for those States which may not be able, with advantage, to support independent financial institutions.

28. In conclusion, we may refer to a number of small industries which call for skill and training and, invariably, for the use of power. The growth of these industries is related closely to the development of heavy industry, including the manufacture of machinery in the country. The advance of technological education is of course a material factor in the progress of such small industries.

CHAPTER XXVI

IRRIGATION AND POWER

Assessment of Water Resources

In India, as in other countries, rivers have had a powerful influence on national and local life. Successful agriculture in most parts of the country is not possible without the use of river waters. The large land resources of India cannot be put to effective use without a simultaneous development and use of the water resources. In fact, integrated development of the land and water resources of India is of fundamental importance to the country's economy. From times immemorial, life and civilization in India have been dependent largely on rivers. The earliest civilizations developed along the banks of the Indus and the Ganga and their tributaries. In the Deccan, except for the narrow strip along the western coast, large parts of the population have depended for their existence on river waters.

2. Irrigation, or the artificial application of water to crops is an old art in India; in many parts it began with agriculture itself. References to the practice of irrigation in India have been traced to many centuries prior to the commencement of the Christian era. The large numbers of tanks, which are found in the Deccan, have been in existence for ages. The Cauvery delta canals date back to the second century and the Yamuna canals were constructed originally about the 14th century. Under certain favourable conditions river waters provide a cheap source of power either directly or through the generation of hydro-electric power. In India, with little oil and coal deposits confined to certain parts of the country, hydro-electric power has an important part in her development. Apart from rivers, underground waters constitute an important source of water supply for domestic and agricultural purposes. The exploitation of sub-soil water resources must be integrated with the use of river waters.

3. Physiographically, India may be divided into four parts : the Peninsula proper, the Himalayas and associated mountains, the Indo-Gangetic alluvial plains and the Thar desert. The Peninsula is an ancient landmass owing its present features to denudation and weathering over long ages. It is composed mainly of ancient crystalline and metamorphic rocks. The western third of the Peninsula is covered by lava flows. Except for a fairly broad strip along the east coast and a comparatively narrow one along the west coast, most of the surface of the Peninsula is composed of hills and plateaus. The coastal plains are the most productive parts of the Peninsula. The Himalayas and associated mountain ranges of northern India are folded mountains of the tertiary age. The Indo-Gangetic plains lie between the Himalayas and Peninsular India and represent a sag or depression in the earth's crust which has been filled up with alluvium brought down by the rivers. They constitute one of the most fertile tracts in the world. The alluvial soil of these plains is being cultivated

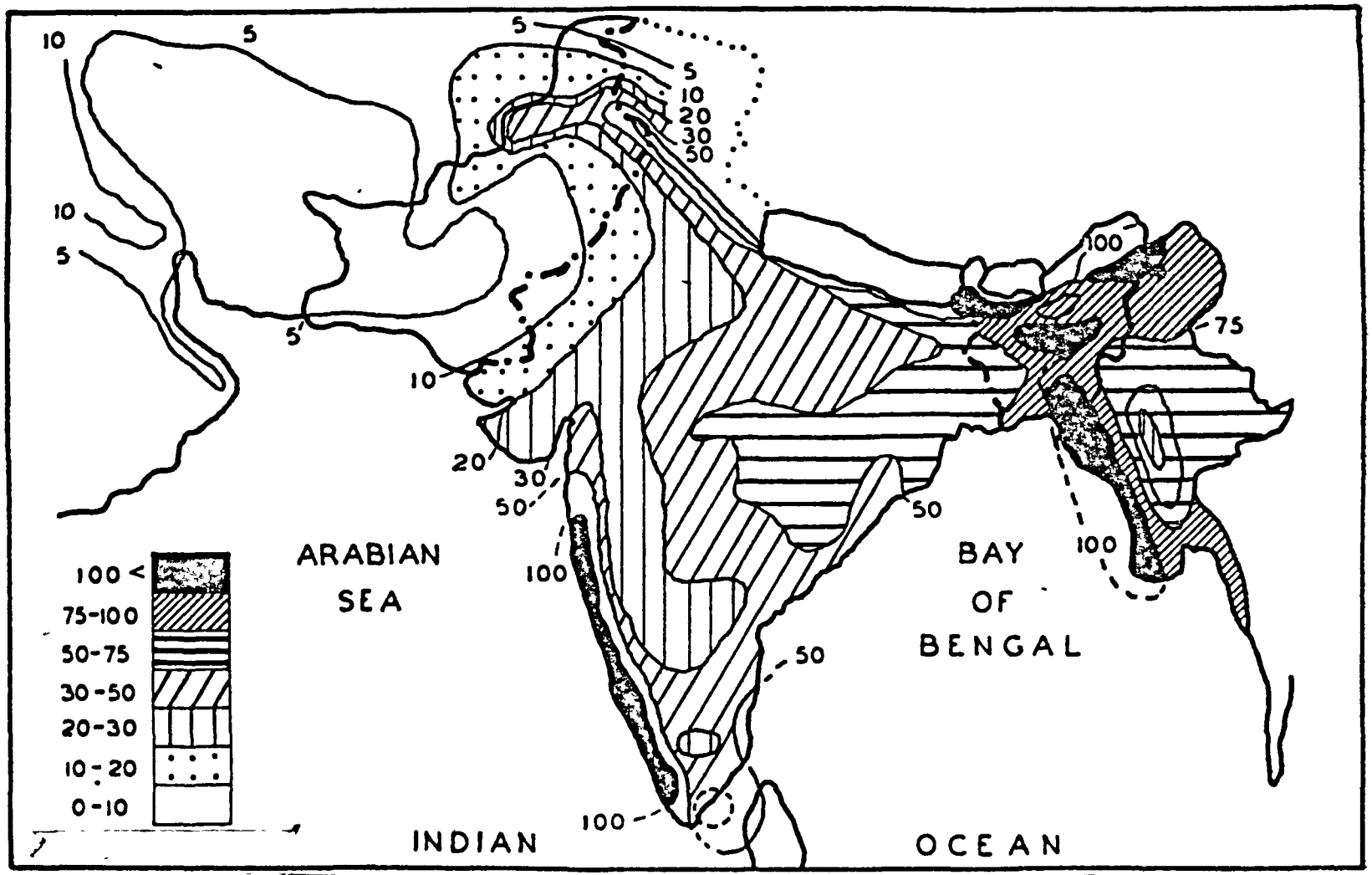

FIG. 1—Map of India: Distribution of Rainfall—Annual

from times immemorial and shows little signs of exhaustion. The rivers flowing through the plains are snow fed, active during the rainy season and carry enormous detritus load. The Thar desert is an arid region in the north-western part of the country. It occupies a large part of Rajasthan.

4. India lies partly in the tropical and partly in the sub-tropical regions of the world ; the Tropic of Cancer passes through the Rann of Cutch and the middle of West Bengal. The sub-tropical zone, comprising Rajasthan and the western part of the Indo-Gangetic Plains shows extremes of climatic condition, while the tropical zone is more equable. In most of the country, there are three seasons : (*i*) Winter : November to March ; (*ii*) Summer : April to June ; and (*iii*) Rainy season : July to October. The exact duration of each season, however, varies in different parts of the country.

5. The outstanding feature of the rainfall in India is its unequal distribution during the year and its variation from year to year in respect of quantity, incidence and duration. The average annual rainfall of India is 50 inches but it is only of the order of 5 inches in the desert in the north-west, increasing gradually across the plains of northern India from west to east until it is about 100 inches in Assam (see Figure 1). In central India, the mean rainfall is of the order of 50 inches a year, and in the Peninsula, except along the west coast, the mean annual rainfall is of the order of 30 inches. Almost the entire rainfall in the country is due to the south-west monsoon and is received during the four months of June to September, with the exception of the south-east portion of the Peninsula, where the rainfall is heavier from October to December. In winter the rainfall varies from ½ to 2 inches except in north-east monsoon areas, and from March till the onset of the south-west monsoon, the country is almost rainless. Apart from its unequal distribution in the year, the rainfall shows considerable variations from year to year. It is not uncommon in many places for rainfall in a year to be less than half the normal ; even one fourth of the normal during a critical period in the crop rotation has been experienced.

Available Water Resources

6. The rivers of India may be broadly divided into two groups : (1) The snow-fed rivers of northern India, and (2) the rivers of central and southern India. The Himalayas give rise to three important river systems of northern India : the Indus, the Ganga and the Brahmaputra. The chief rivers of central and southern India are the Mahanadi, the Godavari, the Krishna and the Cauvery flowing eastward into the Bay of Bengal and the Narmada and the Tapti flowing westward into the Arabian Sea. The Chambal, the Betwa and the Sone drain the northern edge of the Peninsula and flow into the Ganga system.

7. The rivers of northern India, rising in the Himalayas, are snow-fed and flow all the year round though the supplies available in winter are low. The rivers rise with the melting of snows in spring and with the break of monsoons they swell further and carry enormous floods during the rainy season, the supplies falling again from October onwards. The rivers of central and southern India have no snow-fields at their heads and their supplies

depend entirely on rainfall. Since this rainfall is confined to a small part of the year, the rivers carry large supplies in these months and the dry weather flow sometimes dwindles down to almost a trickle.

8. Detailed gauge and discharge observations are available for many of the major rivers in India for the last few decades. Most of these observations are however, mainly in connection with existing or projected irrigation works. There has been no attempt to make a complete hydrographic survey of the country; the task is one of great magnitude. The Indian Irrigation Commission of 1901-1903 estimated that the total annual surface flow in the rivers in India, (as it was then, but excluding Burma, Assam and East Bengal) was 51 billion cubic feet. This is equivalent to 1170 million acre-feet* of water. A more recent appraisal of the water resources of the country, based on an empirical formula co-relating the river flow in each basin with its rainfall and temperature, gives the total annual flow as equivalent to 1356 million acre-feet for the Indian Union. Of this only 76 million acre-feet or 5.6 per cent are at present being used for purposes of irrigation ; the rest flow waste to the sea. The position in regard to utilization of water resources in the important river basins is set out below:

River system	Estimated average annual flow	Existing utilisation and proposed projects
Indus	170 million acre-feet for the entire river system lying both in India and Pakistan.	Existing utilisation in India is about 8 million acre-feet. The Bhakra-Nangal project is the main project in this system. A mean annual utilisation of 8 million acre-feet is contemplated in this project.
Ganga	400 million acre-feet	Only a small part has been utilized, chiefly by canals on the Ganga, Yamuna and Sarda rivers. The Damodar Valley Project is the major project within this system. This proposes to utilise nearly 2·7 million acre-feet of water. Other schemes for development are under consideration.
Brahmaputra	300 million acre-feet	Existing utilisation is negligible. In general, irrigation is unnecessary because of heavy rainfall in Assam.
Godavari	84 million acre-feet	About 14 per cent. has been utilized so far.
Mahanadi	74 million acre-feet	Small quantities are utilized for irrigation in the delta areas. Hirakud project will be the first major development on the system. This project would utilize about 11 million acre-feet of water.

*An acre-foot represents a volume of water sufficient to cover an acre of land with one foot depth of water.

River system	Estimated average annual flow	Existing utilisation and proposed projects
Krishna	50 million acre-feet	Approximately 18 per cent of the flow has been utilized. The Tungabhadra project will ultimately utilize an additional 6 million acre-feet. Schemes for further utilization are under consideration.
Cauvery	12 million acre-feet	Over 60 per cent of the waters are utilized for irrigation in Madras and Mysore.
Narmada	32 million acre-feet	There has been no large project on either of the rivers. The Kakrapara project on the Tapti would be the first major scheme.
Tapti	17 million acre-feet	

9. There are numerous other rivers and rivulets in which waters are available for utilization, mostly on an intermittent basis during the rainy season. On quite a large number of these, small irrigation reservoirs have already been built ; but many more can be construct.d and there is an increasing activity all over the country to utilize the waters of these small streams.

10. Substantial water supplies for irrigation, industrial and municipal uses are available from under-ground waters. Wells have been constructed in all parts of India for domestic water supply and for irrigation of land and they are in use from times immemorial ; but large scale irrigation from this source is possible only with the help of tube wells operated by power pumps. No inventory of the ground water resources for the country as a whole has as yet been prepared. The information available indicates that ground water is generally available in all parts of the country, but it would be economical to tap it for large scale irrigation by means of power-driven tube-wells only in parts of Uttar Pradesh, Bihar, Punjab, Rajasthan and Gujerat.

WATER RESOURCES THAT CAN BE DEVELOPED FOR IRRIGATION

11. Water supplies for irrigation can be obtained from three sources :

(*i*) directly from the water normally flowing in rivers *i.e.*, by diversion Canals ; (*ii*) from storage of flood-waters flowing in rivers or directly of rain water from small catchments ; and (*iii*) from the waters available underground *i.e.*, by wells or tube-wells. The extent to which supplies are available from the three sources mentioned above varies in different parts of India ; so also does the extent to which the available sources can be utilized economically.

12. The total quantity of water flowing in the rivers, a rough quantitative indication of which has been given in paragraph 8 above, is not wholly available or needed for irrigation.

This is due mainly to the following reasons :—

(*i*) Over most of the country, rainfall is concentrated in a comparatively short period of 4 to 6 months. The rivers carry large volumes of water during this period, a great portion of which must go unutilized because it is neither physically possible to divert, nor economic to store, all but a small portion of this flow.

(*ii*) The volume of water, in the rivers, also varies greatly from year to year. Schemes of development, on the other hand, can be executed only on the basis of firm supplies *i.e.*, supplies which would be available during most of the years.

(*iii*) In areas of high rainfall, like the west coast and north-eastern India, irrigation is either not necessary or is needed only to a very limited extent.

(*iv*) Certain quantities of water must be allowed to flow in rivers for hydro-electric development, for purposes of navigation, conservancy and water-supply for towns and villages.

It is difficult to state the percentage of the total river flow that can be used for irrigation. On the Cauvery, which is the most developed river in India, about 60 per cent of the annual flow is utilized. On the other hand, on the Brahmaputra the utilization is almost nil. While conditions certainly vary from river to river, it will not be far out to state that out of a total of 1356 million acre-feet of water, it should be possible to put to beneficial use about 1/3rd or 450 million acre-feet ; the existing utilization is 76 million acre-feet. It should be clear, however, that the extent to which river supplies can be put to further use is governed largely by the extent to which monsoon flows can be stored. Storage projects, by their nature, are more costly than diversion projects. There are, however, two important features of these projects which offset their high cost, *viz.*, the possibilities of hydro-electric generation at the dams and the protection afforded against flood damage.

Existing Development

13. *Irrigation*—A hundred years ago, about 1850, two or three million acres of land were irrigated by large numbers of indigenous irrigation works. These works were in the nature of small tanks in southern India, inundation canals in northern India and reconditioned canals like the Cauvery delta system in Madras and the Yamuna canals. About five million acres were under well irrigation at that time mostly in northern India. The first major irrigation work constructed in India was the Ganga Canal in Uttar Pradesh, opened for irrigation in 1854. This was followed by the Upper Bari Doab canal in the Punjab and the Godavari delta system and the Krishna delta system in Madras. Then came the Sirhind canal in the Punjab, the Lower Ganga and the Agra canals in Uttar Pradesh and the Mutha canals in Bombay, the last named being from a storage reservoir. A number of other large irrigation works were constructed towards the end of the last and the beginning of the present century and again after the end of the first World War. Table 1 gives particulars of important irrigation works existing in the country and Table 2 shows important irrigation and agricultural statistics by States.

14. Subsoil waters have been used in India for irrigation from time immemorial by means of ordinary percolation wells. During recent years, electrically driven tube-wells have opened up a new method of utilising ground-waters on an extensive scale and in Uttar Pradesh, there are over 2000 State-owned tube-wells. Bihar, Punjab and some other States have also recently taken up the exploitation of ground waters for purposes of irrigation by tube-wells. Tube-well irrigation is generally more costly than irrigation by gravity canals from diversion projects. But for areas not otherwise commanded it is a useful means of irrigation in regions with good underground supplies.

15. It will be seen from Table 2 that India has a gross area of 812·52 million acres of which 491 million acres lie in Part 'A' States and 322 million acres in Part 'B' and Part 'C' States. Agricultural statistics are not available for the entire area of the country ; about 230 million acres which formed part of some of the former "Indian States" have not yet been classified. Statistics are at present available for only 581 million acres of land and out of this 369 million acres are culturable. The area actually under cultivation in a year is 277 million acres. The area irrigated from all sources is a little less than 50 million acres or roughly 18 per cent of the total area sown in a year. Thus 92 million acres out of the classified area have yet to be developed in addition to large areas similarly awaiting development from out of the 230 million acres so far unclassified.

16. *Navigation*—Apart from the use of river waters for irrigation and power generation, for water supply and disposal of sewage, another important use is for purposes of navigation. At one time the rivers of northern India were the main arteries of communication. With the construction of railways, river traffic gradually fell off and inland water transport today is restricted to certain parts of Assam, West Bengal and Bihar. The waterways have also gradually gone out of use because of the withdrawal for purposes of irrigation of the bulk of the dry weather flow. In central and southern India, inland transport could not have been very extensive as the dry weather flow was not enough for navigation except by very small country boats.

Flood control—Although flood control cannot be called a water use, the problem of flood control can best be considered in relation to the existing development on the rivers in India. Every year considerable damage occurs from floods in different parts of the country. Until recently no regular statistics of this damage were collected. Whenever heavy damage resulted from a flood in the larger rivers, enquiry committees were set up and in some cases suitable flood control measures were undertaken. Extensive embankments have been constructed in parts of Assam, Bihar, West Bengal and Orissa. The problem of flood control is now always considered in conjunction with the construction of multi-purpose projects. The construction of large dams to store these flood waters is the most effective way of preventing flood damage.

Recreation—Rivers, natural and artificial lakes and large canals provide important places of recreation for the people. Some of these sites are potential centres of tourist traffic.

Fish Culture—Large collections of water and regulated river flow provide excellent facilities for fish culture. Some of these have been developed but not on any large scale.

Assessment of Power Resources

17. *Sources of power can be divided broadly into two classes*—(*i*) exhaustible or those which represent accumulation of energy, gradually formed under the action of the sun's light and heat, *e.g.* coal, mineral oil, peat, natural gases ; and (*ii*) inexhaustible, or those which are replenished by nature as fast as they are utilized, *e.g.* water falls, winds and tides.

The production of power from sources like tides and winds is by its nature limited. Among the fuels derived from growing vegetation, alcohol, which can be manufactured from molasses, mahua flowers, etc., alone has good prospects in India. Projects for increased production of alcohol are dealt with elsewhere in the report. Until atomic power and solar energy come into the field, the development of power resources in India can only be from coal, oil and water.

18. India's reserves of coal have been discussed in Chapter XXVII of the Report. It will be seen that out of total workable reserves estimated at 20,000 million tons, good quality coal is only 5,000 million tons. This has to be conserved for important metallurgical and other operations in which the use of good quality coal is indispensable. There are however, large reserves of low grade coal available which it is now possible to utilize for steam generation in suitably designed furnaces. This opens up a new source of supply for electric power generation by burning lignites (available in large quantities in South Arcot district and in Cutch) and other coals of high ash content which were hitherto considered to be unusable for this purpose. It is however, obvious that on account of the high inert content of these coals, their transport over long distances cannot be economical and these can be used for power generation only in areas in which they occur.

India's wealth of coal is confined to Bihar and West Bengal with small outliers in Assam, Madhya Pradesh and Hyderabad ; large deposits of lignites occur in South Arcot district in Madras and in Cutch. The distribution is uneven and distances from the coal field to industrial centres are so great that except at or near localities where coal mines exist thermal generation of power may often prove uneconomic. Resources of petroleum, so far as known, are small. There is only one field in Assam which produces about 5 per cent of the total requirements of the country ; the remaining 95 per cent of the consumption has to be met by imports.

19. India's resources of hydro-electric power are vast. These resources have not even been surveyed in their entirety. A committee was appointed which issued a preliminary report in 1919 and a final report in 1921 and indicated a minimum continuous water power potential in India of 3·5 million kW. This, however, is proved to be an under-estimate. Projects not included in that survey have since been taken up for investigation and some of them are in an advanced stage of development. There are no doubt other sites which have not yet been taken up for investigation. The total hydro-power potential of India may be up to 40 million kW.

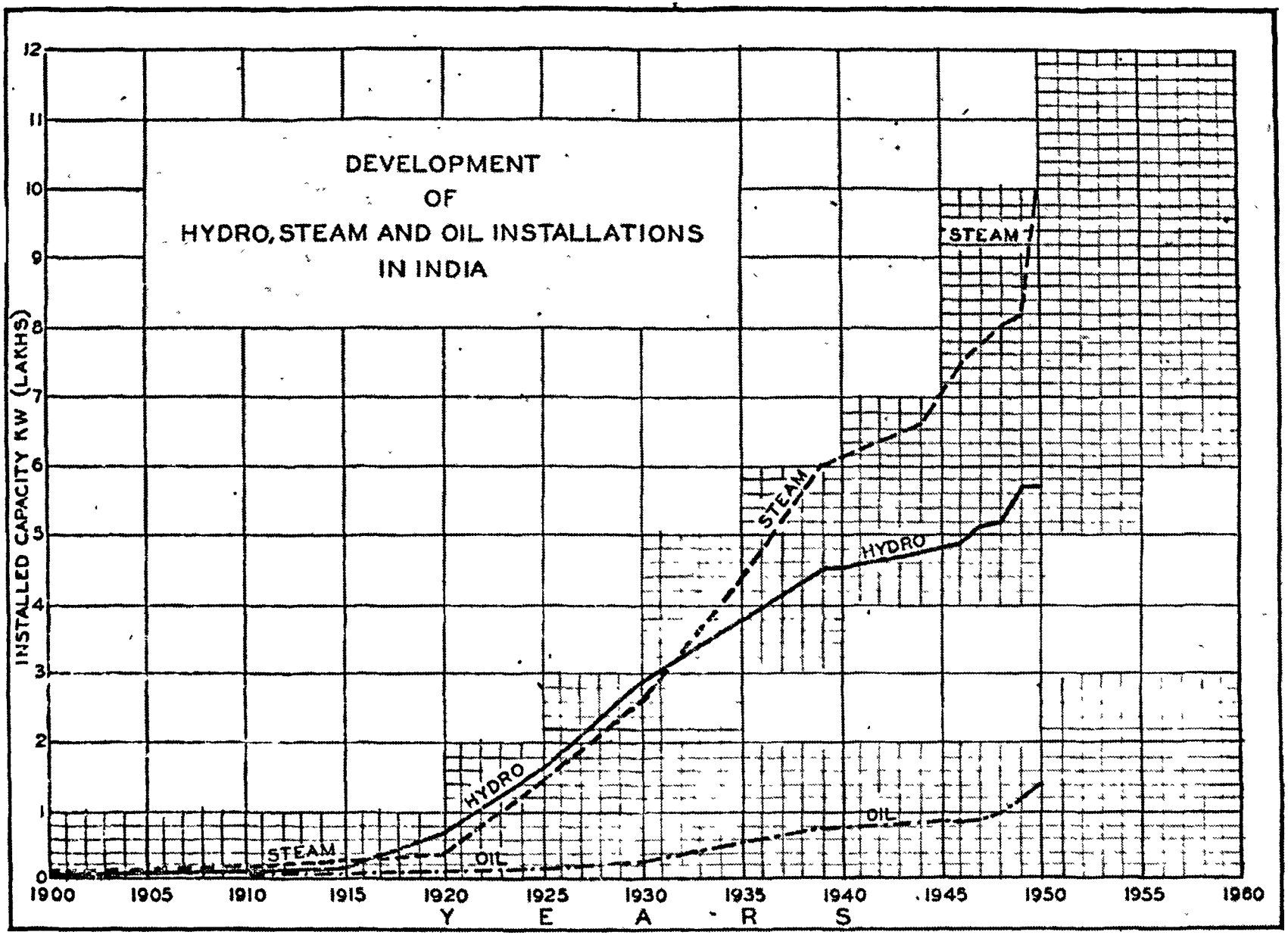
DEVELOPMENT
OF
HYDRO, STEAM AND OIL INSTALLATIONS
IN INDIA
INSTALLED CAPACITY KW (LAKHS)
0
1
2
3
4
5
6
7
8
9
10
11
12
STEAM
HYDRO
OIL
STEAM
HYDRO
OIL
1900
1905
1910
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
YEARS

FIG. 2

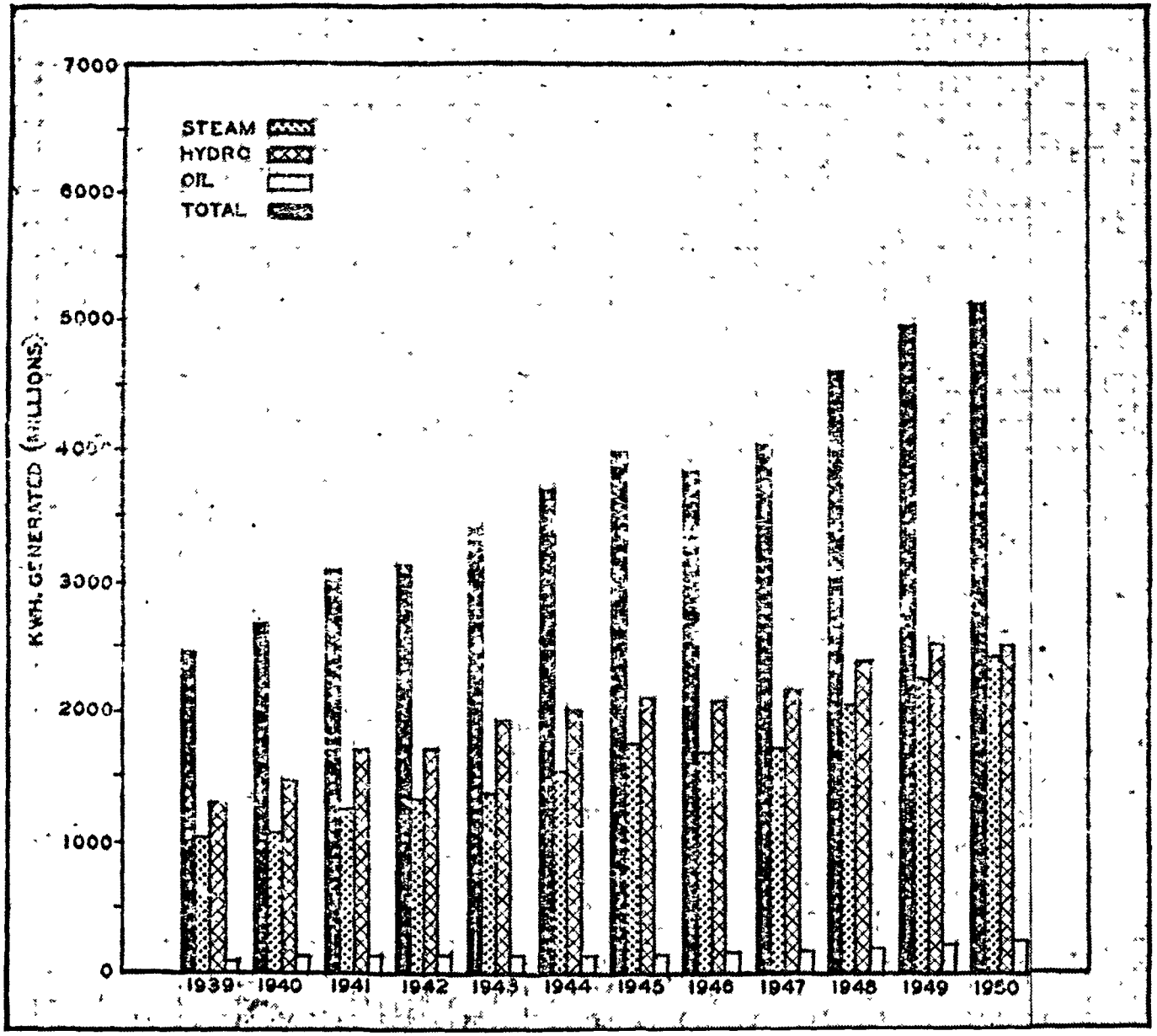

FIG. 3—Power generation in India.

EXISTING DEVELOPMENT

20. Most of the electrical installations in India in the early years were established for meeting the domestic and industrial needs of urban areas. The first large station for the supply of electric power was erected in Calcutta about the end of the last century and in the next two decades similar power supply stations were established in other large towns. These were nearly all thermal stations. The first hydro-electric station in India was erected at Sivasamudram in Mysore in 1902. This was followed by the Tata hydro-electric stations for the Bombay area. The progress of public electricity installations in the country since 1900 is shown in Figure 2. It will be seen from this that upto 1920 progress was rather slow, but after that date, the industry has seen rapid and continuous expansion. During the twelve years since 1939, the total electricity generating capacity has nearly doubled—from about 1 million kW. in 1939 to 1·71 million kW. in 1950. The total electricity generated (see figure 3) has also increased from about 2500 million kWh. to 5100 million kWh. during the same period. Approximately 60 per cent. of the electric generating capacity is in coal burning stations, 32 per cent in hydro-electric stations and the remainder in oil burning stations.

A comparison of Figures 2 and 3 shows that although the installed capacity of hydro installations is about 60 per cent that of the steam installations, the units generated by the hydro-electric plants are about 110 per cent of those generated by the latter. The existing pattern of development of public electricity undertakings is indicated in the following table which shows the installed capacity and power generated by different categories of public electricity supply undertakings :

Particulars of Public utility power stations	Number of undertakings	Installed capacity as on 31-12-50 kW.	Percentage of grand total	Power generated	
				Million kWh.	Percentage of grand total
Steam					
(*i*) Public undertakings—					
(*a*) Government	30	245,914	14·36	619·497	12·13
(*b*) Municipalities	NIL	NIL	..	NIL	..
(*ii*) Companies	35	758,520	44·29	1,767·700	34·62
TOTAL	65	1,004,434	58·65	2,387·197	46·75
Oil					
(*i*) Public undertakings—					
(*a*) Government	103	57,716	3.37	58 331	1.14
(*b*) Municipalities	7	9,892	0.58	16.316	0.32
(*ii*) Companies	192	81,188	4.74	125.084	2.45
TOTAL	302	148,796	8·69	199·731	3·91
Hydro					
(*i*) Public undertakings—					
(*a*) Government	14	306,323	17·89	1,387·538	27·17
(*b*) Municipalities	4	7,510	0·44	22·171	0·43
(*ii*) Companies	4	245,452	14.33	1,110·063	21·73
TOTAL.	22	559,285	32·65	2,519·772	49·34
GRAND TOTAL	389	1,712,515	100·00	5,106·700	100.00

21. In addition to the public utility power stations described above, there are a number of industrial and railway installations having their own power plants. The total generating capacity of these plants was approximately 588,000 kW. in 1950. Including these stations the total electric generating capacity in the country in 1950 was approximately 2·3 million kW., of which 1·7 million kW. was in thermal stations (including oil burning plants) and about 560,000 kW. in hydro-electric plants.

22. Important particulars of major power projects in the country are shown in Table 3. In Bengal and Bihar, where the coalfields are located, most of the electricity generation is from coal, whereas in Bombay as well as in south India, where coal has to be transported over long distances, hydro-electric development predominates. Outside of these areas, electric development consists generally of thermal stations supplying urban areas or particular industries. In the Punjab (I) and western U. P., however, there are two important hydro-electric stations one at Jogindernagar and the other forming part of the Ganga electric grid. Table 4 shows for all States the installed capacity of power plants and the per capita generation of electricity. It will be seen that Bombay, Mysore and West Bengal are more developed than other parts of India, the most backward being Orissa and Assam.

23. It was mentioned earlier that electric supply undertakings were set up in the first instance for supplying the domestic and industrial needs of urban areas. This urban bias of the industry has persisted to a large extent. The two cities of Bombay and Calcutta alone consume about 40 per cent. of the total electricity generated in India. The following table shows the availability of electricity in 1950 to towns and villages in India :

Population range (1941-Census)		Total number of towns or villages	Number of towns or villages with public electricity supply	Percentage of towns or villages with public electricity supply to total
Over	100,000	49	49	100.00
100,000	50,000	88	88	100.00
50,000	20,000	277	240	86 64
20,000	10,000	607	260	42.83
10,000	5,000	2367	258	10.86
Below	5,000	559062	2792	0 50

It will be seen from the above that all towns with a population of 50,000 and over, and most of those with population above 20,000 are supplied with electricity. Rural electrification on the other hand, has made very little progress. Out of approximately 560,000 villages in the country, only about 3,000 or one in about 200 is served with electricity. This development, moreover, is confined mainly to Mysore, Madras and U.P. and is associated in each case with the development of Hydro-electric power.

NEED FOR FUTURE DEVELOPMENT

24. Situated as India is geographically, with a tropical or sub-tropical climate with practically no rainfall over a large part of the year and uncertain rains during the monsoon months, successful cultivation is not possible in many parts of the country without the aid of irrigation. In the absence of irrigation facilities, large areas produce only a catch crop depending on rainfall alone, which as explained above, is often deficient and unevenly distributed from the point of view of agricultural requirements. It is not surprising, therefore, that the average yield per acre of cultivated area is very low. With the provision of irrigation facilities the yield per acre can be increased considerably. In some areas this increase may be of the order of 50 per cent. but in areas of low and uncertain rainfall this increase may be 2 to 3 times the yield from unirrigated lands ; also large areas of cultivable land, now barren and lying waste can be cultivated and put to productive use if irrigation facilities are provided. The quantity of water and the frequency of irrigation required to mature crops vary in different parts of the country. In some areas like parts of Rajasthan, nothing will grow without the artificial application of water. In others, like Assam, where rainfall is plentiful, little irrigation is necessary and the problem, generally speaking, is one of draining the land for cropping. Between these two limits, there is a wide range of variation in the nature and quantity of irrigation required to mature a crop. In some areas, irrigation works are required, as a stand-by, to be used once probably in two or three years during a drought and at others for some of the more valuable crops or only in the period just before the rains set in. There are large tracts, however, particularly in Rajasthan, Punjab, western U.P. and parts of the Deccan, where irrigation is necessary for cultivation and is required all the year round. Table 2 illustrates the varying extent of irrigation practised in different parts of the country.

25. Apart from the rainfall—its shortage and abnormal distribution—floods, hailstorms, frosts and other vagaries of the season also affect India's agriculture. Other causes that contribute to a low yield include uneconomic units of cultivation, lack of fertilizers or manure, the use of bad seed, etc. The pattern of cultivation that has developed under these conditions is generally of an uneconomic type and does not provide adequate employment for those engaged in agricultural pursuits. Over large areas of the country only one crop per year can be grown—during or after the monsoon rains. But where adequate irrigation facilities are available, the pattern of agriculture is different. Two crops can generally be grown and in places, even three. Also, it is not necessary for the cultivator to restrict himself to the particular crops that can be matured during the two or three favourable months of the year ; he can look ahead and plan a scheme of cropping that will keep him busy all the year round. He has also the incentive to improve his method of cultivation—use improved seeds and manures and practise crop rotation etc., because he is assured of his efforts bringing results. The supply of irrigation can thus change the entire agricultural pattern of large parts of the country and lead to increased production from land and increased employment for the cultivator.

THE QUANTUM OF DEVELOPMENT NECESSARY

26. *Irrigation*—The population of India has been increasing very rapidly during the last few decades. Between 1901 and 1951, there has been an increase of over 120 millions—from 235·5 millions to 356·9 millions—in the population of the areas comprising the present Indian Union. Agricultural development has, however, been comparatively stagnant during this period, with only a small increase in cultivated area. The following table shows the quinquennial averages of areas cultivated and irrigated in the provinces of undivided India (excluding Burma) during the last half century.

Average for five years	Total area cultivated	Area irrigated by Government works	Total area irrigated
		(Million acres)	
1896—1900	179·6	16·0	29·6
1901—1905	192·9	18·6	32·5
1906—1910	204·5	21·2	39·4
1911—1915	207·7	23·5	44·5
1916—1920	203·9	25·9	45·5
1921—1925	208·4	25·8	46·0
1926—1930	209·4	27·2	46·8
1931—1935	210·0	28·1	48·8
1936—1940	212·0	30·5	54·5
1941—1945	216·6	33·6	58·1

It will be seen that between 1906 and 1935 the cultivated area remained more or less constant at 205—210 million acres. The only increase in production during this period was due to the increase in irrigated area which meant assured crops and increased outturn per acre. Some new lands came under irrigation and lands which produced indifferent crops were given up. The total irrigated area increased from about 30 million acres to 58 million acres, or nearly doubled, during the half century 1896 to 1945. The area irrigated by government works increased somewhat more rapidly—from 16·0 million acres to about 34·0 million acres—during the same period. But the increase in production on account of new irrigation facilities was more than counter-balanced by the increase in population.

27. The partition of the country in 1947 made the food problem worse for the Indian Union, as large parts of the highly developed canal-irrigated areas were included in Western Pakistan. Of the total of 400,000 cusecs of water carried by the canals of undivided India, nearly half is carried by the canals now in Pakistan and of the total of 24 million acres of land irrigated by State-controlled canals in undivided India, a little more than half now lies in Pakistan. This has added to the seriousness of the food situation in the Indian Union. With 18 % of the population of undivided India, Pakistan has 23% of the total area, 32% of the rice, 35% of the wheat and 25 % of all the foodgrains of undivided India. It has been estimated that the territories comprising India depended, prior to the partition, for about one million tons of foodgrains annually on the areas now in Pakistan.

28. The food problem has been dealt with elsewhere ; it is sufficient here to state that India can produce all that is needed to ensure progressively improving standards of nutrition for its increasing population.

(*i*) By utilising its water resources to the fullest extent practicable. The Planning Commisson has calculated that it will be necessary to double the area under irrigation within the next 15 to 20 years if the food problem is to be solved.

(*ii*) Secondly and concurrently with this, by improving the standards of agricultural practice through the application of the results of scientific research to agriculture.

29. *Power*—Cheap electric power is essential for the development of a country. In fact, modern life depends so largely on the use of electricity that the quantity of electricity used *per capita* in a country is an index of its material development and of the standard of living attained in it. Apart from its use in industrial undertakings, electricity has a remarkable diversity of application. Electricity can provide cheap power for pumping water for irrigation and for numerous operations in agriculture and in the home. Extensive use of electricity can bring about the much needed change in rural life in India. It cannot only improve methods of production in agriculture and encourage cottage and small scale industries but can also make life in rural areas much more attractive and thus help in arresting the influx of rural population into cities.

30. The use of electricity in India is very limited at present. The average *per capita* consumption of electricity is only 14 kWh per year (as compared with 1100 kWh in the United Kingdom, 2207 kWh in the United States of America and 3905 in Canada) and in a number of States the average is below one unit per year (see Table 4). Only five States have a *per capita* consumption higher than the average mentioned above for the country as a whole. Apart from this as stated already in paragraph 23 above, the development of power in India is unbalanced as between urban and rural areas. About 3 % of the country's population in six large towns get the benefits of 56 % of the total public utility installations.

31. There are many areas where the need for more electricity is immediate. In these areas, the growth of plant capacity has not been able to keep pace with the growth of load since 1940. There is an acute shortage of power in the Bombay area, Delhi, parts of Uttar Pradesh, Madras and West Bengal. To meet the normal growth of load, which received an impetus during the years of the war, all available spare capacity was put under operation and in many installations there is no stand-by plant. During the years of war and after its end, it has not been possible to obtain additional plant or replacement. Several restrictions have had to be imposed on new connections and devices like staggering of holidays and of working hours have had to be adopted to meet the minimum demands of industry. The economic development of the areas concerned is thus under check.

Apart from the above many of the generating units have outgrown their useful life and need replacement. Of the total installed capacity of 1,004,000 kW of public utility steam plants, it has been estimated that over 100,000 kW would have been in service for more than 25 years and would have to be retired now or in the near future.

32. Electricity has a great scope in India in the development of agriculture and related activities. Since 1933 when State tube-well schemes were first taken up in Uttar Pradesh, there has been an increasing demand for electricity for tube-well pumping. Further, as a part of the " Grow More Food Campaign ", pumping units have been installed on rivers or wells for agricultural purposes. The supply of cheap electric power is essential for large scale development of tube-wells or lift irrigation from rivers. In 1948, about 35% of the electric energy generated by the Ganga Canal Grid in Uttar Pradesh (about 61 million kWh) was utilised for pumping of irrigation supplies with about 2,200 tube wells, owned and operated by the State. In Madras and Mysore, irrigation pumping is mostly done from open wells or tanks. In 1949 there were about 12,500 such consumers in Madras State alone, and they took about 11 2% of the energy sold by the public utilities. About 20,000 applications for further connections are stated to be on the waiting list because of the shortage of plant capacity In Travancore-Cochin, electricity is in use on a large-scale, for de-watering of marshy lands. An idea of the growing importance of the use of electricity for agricultural purposes can be had from the following figures which show the trend in consumption of electricity for irrigation and agricultural de-watering in the Indian Union in recent years.

Year	Consumption in million kWh for irrigation and agricultural dewatering.
1939	64
1945	93
1947	125
1949	150

There are also other agricultural operations for which electricity will be in demand as people are trained in its use—*viz.*, processing of agricultural produce, cold storage, preservation and canning of fruit and farm produce, dairy farming, poultry breeding. Cottage industries can be developed on an economic basis with the provision of electricity to rural areas and by the use of electrically worked appliances or small units of machinery.

33. *Other water uses*—Transport of goods by water is generally cheaper than transport by rail. Also, in times of emergency, alternative means of transport are of great importance to the defence and security of the country. With the storage of flood waters by dams and their gradual release for purposes of hydro-electric generation, new possibilities have been opened up for the development of inland transport. In every river valley development the possibilities of inland navigation must be investigated and integrated with the overall development.

34. The damage which occurs every year on account of floods has been referred to earlier. Destruction of crops and dwelling houses and dislocation of communications by floods are a normal feature in certain riverine areas, specially in Assam, Bihar, Bengal, parts of Uttar

Pradesh and Orissa. In southern and central India, tanks breach annually due to heavy and uncontrolled floods and are rendered unserviceable. The total loss to the country directly due to these floods and indirectly through loss in production has not been estimated but it is admittedly heavy As already stated, flood control measures must be considered as a part of river valley development in case of each multi-purpose project.

35. The problem of soil conservation which has received little active consideration in India until recently, has been dealt with in an earlier Chapter. Here it is only necessary to emphasise the importance of soil conservation in the development of water rsesources and in extending the useful life of reservoirs, made by the construction of high dams. Unless special measures are taken in the catchment area above these dams to reduce, by suitable soil conservation measures, the washing away of soil by rain water, the detritus carried by flowing water will be deposited in these reservoirs and their capacities seriously impaired. Such measures should form an integral part of every large irrigation project.

Development Under the Plan

Need for a national policy

36. It has been shown that for increasing the production of food and other agricultural produce, it is necessary that irrigation projects should be undertaken wherever there are facilities for such projects. .The need for cheap power for tube-well and pump irrigation and for cottage and small-scale industries has also been emphasised. Upto 1920, irrigation projects were sponsored by the Central Government. In that year came constitutional changes under which all irrigation and power developments became the responsibility of State Governments. Since 1945, however, the Central Government has been encouraging and actively assisting in such projects recognizing that, while the initiative of States in these fields should remain unimpaired, there should be a national policy in regard to them. The reasons for this can be easily stated.

In the first place, it is not in all parts of India that facilities exist for irrigation, and where these exist they should be fully developed in the interests of the food requirements of the nation as a whole. As the Irrigation Commission (1901-3) has said :—

> " Every extension of irrigation increases the security of the food supply of the country in years of drought, and, in these days of cheap railway freights, the produce of irrigation can be carried to those parts in which it is most required. For these reasons we think that the programmes of future expenditure on irrigation works should provide for the construction of as many productive works as can be proposed, in whatever parts of the country they are situated, and without reference to the urgency of protection for the locality. Promising projects could be held in abeyance only when funds cannot be allotted for them without interrupting progress on irrigation works of any kind which have been actually commenced, or withholding money from works more urgently required for

protective reasons or when adequate establishment is not available for carrying out the works ; when the success of the works depends upon colonization operations which it may be more convenient on general grounds to postpone. "

Recent experience has demonstrated that the food problem is one for India as a whole which can be solved only by All India measures.

Secondly, the works that are now in progress and those that remain to be taken up present more difficult engineering and other problems than those already completed. In most cases, the construction of high dams is necessary and technical questions of extreme complexity arise in their design. Modern mechanical methods have to be adopted in their execution. All this calls for the pooling of the best knowledge and resources available in the country and arrangements for training of technical staff on a large scale.

Thirdly, river valleys are not confined to State boundaries and development schemes of different States have to be co-ordinated and interrelated for the achievement of maximum results. Water stored in a reservoir in one State may have to irrigate areas in others and power generated in one State is consumed in other States. In such cases, agencies for joint investigation and management may have to be organized.

Fourthly, large projects call for financial outlays which are beyond the financial resources of States and which cannot be taken up unless Central assistance can be made available from year to year over a fairly long period on a carefully arranged programme.

37. As already stated natural waters have many uses for the community, their optimum development is therefore possible only if all such uses are co-ordinated. The use of stored waters for irrigation and their use for the development of power generally require different systems of escapages from the reservoir. Some of the difficulties on this account can be solved by suitable engineering works and techniques, but there are others which make the two uses of water mutually exclusive to some extent and ultimately it is necessary to decide how far the use of water for one purpose should give way to its use for another in the larger interests of the community. The requirements of navigation are also generally different from those of irrigation ; these have more in common with the requirements of power. Flood control is partially achieved when river water is used directly for irrigation ; storage makes flood control more effective. With suitable provisions in the design of dams, it would be possible, at small additional cost, to provide for adequate flood protection. The development of fisheries and of recreation facilities are other uses of natural waters which can be secured for the community at a moderate cost. It is necessary that in all new projects co-ordinated effort should be made to provide for the varied requirements of the community for irrigation, power generation, flood-control, navigation, fisheries development and recreation.

38. It has been stated in paragraph 28 above that the aim before the country should be the doubling of the area under irrigation in 15 to 20 years or in other words, to provide new irrigation facilities to 40 to 45 million acres. Similarly, there must be an increase in the present low *per capita* consumption of electricity in the country. An examination of the new

irrigation and power projects, that are under construction, under investigation or only under consideration throughout the country, shows that it will cost about Rs. 2,000 crores to construct all these projects which will add 40 to 45 million acres to the area now under irrigation and create an additional power-generating capacity of about 7 million kW. We are convinced that it is only by the implementation of a programme of this magnitude and by intensive measures for improving the standard of agricultural practice and for the promotion of cottage and small-scale industries in addition to large scale industries that an appreciable rise in the standard of living in the country can be achieved.

39. A large multi-purpose river valley project takes from two to five years for detailed investigation and preparation of plans, etc. and five to ten years for construction. The organisation of the technical and other personnel and the mechanical equipment needed for them must therefore be carefully devised. The most economical phasing of large projects and a programme of construction would be possible only if there is a long term plan carefully framed with accurate financial estimates and with due regard to the technical resources and equipment available.

Basis of the Plan

40. During the last six years, there has been considerable activity in all parts of the country in new irrigation and power projects. A number of projects—some multi-purpose and others only for irrigation—were sanctioned soon after the end of World War II. On some of these, works were started before the completion of detailed investigations and of economic studies necessary to obtain a correct appraisal of the technical and financial aspects of the projects. The total cost of irrigation and power schemes which were under construction in 1951 would on completion be Rs. 765 crores ; a sum of Rs. 153 crores had already been spent on them up to 31st March, 1951. There can be no question that these projects must be completed as quickly as possible so that the expenditure already incurred on them may be put to productive use and the benefits particularly by way of additional food, may be secured quickly. This is an important consideration in the proposals formulated by us. Whatever views we may hold about the relative importance or merits of the projects under construction or those not yet started, the highest priority must be given to projects on which considerable sums of money have already been spent. We have, however, during the course of our discussions with the representatives of State Governments, impressed upon them the vital importance of giving a high priority to projects or parts of projects which will provide additional food and have recommended that the programme of construction of some of the bigger multi-purpose projects should in consequence, be suitably modified. After incorporating such changes as have been agreed upon, it appears that an expenditure of Rs. 518 crores will have to be incurred on the schemes already in progress during the five year period of the plan and of this a sum of Rs. 266 crores will have to be spent in the first two years of the plan. As a large slice of the total developmental expenditure included in the plan has to be set apart for the completion of irrigation and power projects already under construction, it has not been possible to include many new works of irrigation and power development in the Five Year Plan. Particularly, during the first three years of the plan, when the expenditure on projects already under

construction would be relatively high, it is not possible to incur large expenditure on any new work. Thus the Five Year Plan for irrigation and power aims mainly at the completion of the projects already under construction.

41. In the preparation of this plan, as already stated, projects likely to yield additional food at an early date, have been given preference over others and the large multi-purpose projects have been phased with a view to the early completion of their irrigation aspects; the power generation is carefully regulated and taken up in stages as the demand arises. In our discussions with State Governments, we have laid great emphasis on proper planning for the development of load for every large generating unit. The pattern of power utilisation has to be laid down in advance and development of generating capacity co-ordinated with the development of load so that there is as little lag as possible between power generation and its utilisation.

42. As already stated it would not be correct to say of all the projects included in the plan that works were started after detailed technical investigation and careful assessment of the economic aspects. The inclusion of a project in the plan does not, therefore, dispense with the need for periodical reviews of it at definite stages. A large project usually comprises a number of distinct units or groups of connected works, and, as technical and other investigation in regard to each such group is completed, it would be desirable to review the economic and financial aspects of the project as a whole, and where necessary, to modify the scope of the project or portions of it. After a review of the Bhakra, the Damodar Valley and Hirakud projects, the programme of construction and the portions of the projects to be included in the First Five Year Plan have been suitably revised.

43. As stated above, the yearly expenditure on works already under construction is high in the first three years and falls off from the fourth year. As a result, unless new works are taken up, it will not be possible to utilise to the full in the latter part of the plan, the technical and other resources built up over a number of years. To meet this situation and also the need that has been felt for including in the plan other urgent works, especially in backward areas, a few new projects have been selected work on which will be taken up in the latter part of the plan. The expenditure on these projects during the period of this plan will be a small proportion of their total cost, but their inclusion in the plan, at this stage, will secure continuity of development from the first to the second Five Year Plan.

The Plan

44. Important particulars of all the irrigation and power projects included in the Five Year Plan, the cost and annual expenditure, on each and the likely benefits are given in Statement V of the supplementary Volume on Development Schemes in the First Five Year Plan of the Report. An abstract is shown in Table 5.

The projects already under construction are, on the basis of sanctioned estimates, expected to cost, on completion, Rs. 765 crores. On these an expenditure of Rs. 153 crores. had been incurred up to the end of March 1951. During the Five-Year period covered by the Plan, it was originally proposed to spend Rs. 448 crores on these schemes. It is, however, understood that on account of increased cost of constructions, changes in the scope of some of the projects and for other reasons, it will be necessary to spend during the period of the

Plan, an additional sum of Rs. 50 crores on the multi-purpose projects and Rs. 16 crores on the State Irrigation and Power Schemes listed in the Statement V In addition to the above, the plan provides a sum of Rs. 3.6 crores for expenditure on Irrigation and Power projects in Jammu and Kashmir State. The projects under construction are calculated to irrigate an additional area of 8.5 million acres in the last year of the Plan and to generate 1.08 million kilowatts of additional power. After the completion and full development of these projects, the total addition to the area irrigated will be 16.9 million acres and to power 1.4 million kilowatts.

45. The question of new projects to be included in the Plan has received our careful attention. The claims of large numbers of new projects, many of which have not been thoroughly investigated, have been pressed upon us by State Governments. After a careful consideration of the resources that can be made available, we have decided to include in the Plan the following five major irrigation and power projects, for which project reports, and plans and estimates have been prepared—

Name of Project	Area served	Total estimated cost (Rs lakhs)	Ultimate benefits	
			Irrigation '000 acres	Power '000 kW installed
Kosi (Stage I) . .	Bihar and Nepal	66,00	2,620	40, also flood control
Koyna (Stage I) . .	Bombay . .	33,00	..	240
Krishana (scope not yet defined)	Madras & Hyderabad	Not available	Not available	
Chambal (Stage I) .	Madhya Bharat & Rajasthan	33,75	1,200	80
Rihand . .	Uttar Pradesh .	35,00	..	240

The total cost of these projects will be well over Rs. 200 crores, out of which it is expected that it might be possible to spend Rs. 40 crores on them during the period of the Plan. The financial and technical responsibility of the Central Government and of the State Governments concerned with regard to these projects (and of the Government of Nepal with regard to the Kosi Project) and the programme of their construction will be settled before work is commenced on any project.

46. The annual expenditure on and likely benefits from all projects, year by year, would be as follows—

Year	Expenditure (Rs. crores)	Additional irrigation (acres) (progressive)	Additional Power (kW) (Progressive)
1951—52 . .	85	646,000	58,000
1952—53 . .	121	1,890,000	239,000
1953—54 . .	127	3,555,000	724,000
1954—55 . .	107	5,749,000	875,000
1955—56 . .	78	8,533,000	1,082,000
Ultimate : . .		16,942,000*	1,465,000*
New Schemes .	40	.	..
Five years' total .	558	..	..

*Excludes benefit from new schemes.

47. In addition, there are a large number of small schemes, construction of wells, renovation of tanks, improvements to small streams and rivulets, etc. which are classed as 'minor irrigation works' and have been included in Chapter XIV under the programme for agricultural development. These minor irrigation works are estimated to cost Rs. 47 crores during the period of the Plan. A large portion of expenditure on these schemes would be by way of subsidies, loans etc. to individuals or societies who will contribute similar or greater share of the expenditure on such schemes. These works are expected to bring an additional area of 8·2 million acres, under irrigation by 1955-56. In addition it is proposed to earmark another Rs. 30 crores for minor and medium irrigation works, which will bring a further 3 million acres under irrigation.

The schemes included in the Five Year Plan are expected to utilise about 100 million acre-feet of water per annum in a normal year. This figure is only approximate and constitutes 7 per cent. of the total utilizable water resources of the country.

48. In the field of power apart from the schemes included in the Five Year Plan, undertaken by the State Governments, there are a few extension projects of private electricity undertakings which are expected to be executed during the period of the Plan and will add 176,000 kW of installed capacity. The more important of these are the proposed extensions of the Ahmedabad Electric Co., the Calcutta Electric Supply Corporation and the Tata's Power Installations.

Utilization of Power

49. The following table shows region-wise the expansion in power generation and anticipated load during the period of the Five Year Plan. The three multi-purpose projects have been shown separately in the table. It will be seen that the total increase in generating capacity would be 1·08 million kW in the public sector, of which 338,000 kW or one third would be contributed by the three multi-purpose projects. The power benefits from these projects during this period represent however only the first state of development, their ultimate capacity on full development being about one million kW—

	Additions anticipated by 1955-56 in thousand kW.		
	Installed capacity	Firm power	Anticipated load
1. Multi-purpose projects ·			
(*i*) Bhakra Nangal . .	96	72	69
(*ii*) Damodar Valley . .	194	144	132
(*iii*) Hirakud Dam . .	48	24	24
2. Madras, Mysore, Hyderabad and Travancore-Cochin .	402	511*	639
3. Bombay area . . .	83	358*	417
4. Bihar, Bengal and Madhya Pradesh . . .	88	65	101
5. Uttar Pradesh . . .	109	157*	146
6. Projects in other areas . .	62	66*	66
TOTAL	1,082	1,397	1,594

*In the case of projects whose power is fed into an existing power system the firm power of the entire power system has been taken with the corresponding anticipated load on the system as a whole. Projectwise details of installed capacity, firm-power, and anticipated load for the above table are given in Statement V of the supplementary Volume on Development Schemes in the First Five Year Plan.

As the need for irrigation is urgent, the projects have been so phased that full development of irrigation is achieved as soon as possible, and the development of power is taken up in stages according as demand grows. Production of power on a large scale much in advance of actual needs locks up capital and lowers returns on projects. Further additions of generating units will therefore, be made only as and when additional demands arise, but provision for installing additional units has to be made in the designs of dams and other works.

50. The position regarding utilisation of the power generated may be briefly reviewed.

The multi-purpose projects—In the Bhakra-Nangal Project, the load figures indicated in the above table are tentative pending the compilation of the results of a load survey which is in progress. These figures include a supply of about 20,000 kW to Delhi and also provide for electrification of 27 towns in Punjab, supply to 10 small Government-owned undertakings and 14 private licensees and to existing industries which at present generate their own power in relatively small, inefficient thermal units. Provision has also been made for bulk supply to PEPSU, Rajasthan, Bilaspur and Himachal Pradesh. A load survey has been carried out in the Damodar Valley Project area. The present and prospective demands for power have been assessed on the basis of factual data, although there may be a time lag in the development of a part of the estimated demand as this includes conversion to electricity of installations employing about 136,000 HP. of steam and oil engines which are old and have to be replaced. In the Hirakud Project, the initial load of 20,000 kW comprises existing loads like those of colliery and towns ; supplies to two textile mills and to a cement factory at Rajgangpur ; and rural loads in the delta area including small scale pumping installations for irrigation purposes. Negotiations are in progress for the setting up of an aluminium plant and a ferro-manganese plant in this area. These two will require about 35,000 kW of power.

Madras, Mysore, Hyderabad and Travancore-Cochin— The total addition to generating capacity in this region would be 402,000 kW of which 196,000 kW would be in Madras, 72,000 kW in Mysore, 53,000 kW in Hyderabad and 81,000 kW in Travancore-Cochin. In the case of Madras, the demands already in sight total 169,000 kW as numbers of applications for power connections from both industrial and agricultural users (mainly for irrigation pumping) are pending in the State. In Mysore, there would be an additional capacity of 72,000 kW in the period of the Plan but the load forecast as made by the State Government shows that the demand will exceed available capacity by 1953-54, as certain firm commitments have to be met like the three pig iron furnaces at Bhadravati, power supply to Madras and Bombay States, and power supply to about 2000 pumping sets in addition to the normal load growth. In Travancore-Cochin the available generating capacity will be taken up by 1955-56, when a total load of 84,500 kW is expected to be reached.

Bombay area—In the Bombay industrial region there has been acute power shortage since 1948. The additions to generating capacity, totalling 108,000 kW, which are already in progress will be just sufficient to meet the demand up to the end of 1953. To meet the subsequent increases in demand for power, the Tata Power Co. have been recently permitted to build a 100,000 kW steam station at Trombay.

The other important power schemes in Bombay State are the North and South Gujerat Grid and expansion of the Ahmedabad Electric Supply Co. The latter will meet the increased demand in Ahmedabad city and also supply 18,000 kW to the North Gujerat Grid. Power from the North Gujerat grids will be supplied to licensees in the towns of Gujerat and will also be available for industries and for irrigation pumping.

Uttar Pradesh—In U.P. the total additions to generating capacity would be 109,000 kW made up of installations at the new power stations of Sarda, Pathri, Mohammadpur and the Eastern Area Power Station (at Mau), and additions to the existing station at Kanpur. Part of the power from the Sarda power station will be consumed by tube-wells and industries like sugar factories and oil mills, and about 10,000 kW will be exported to the Ganga Canal Grid. This power along with the additions at Mohammadpur and Pathri will increase the power supply in the Grid by 40,000 kW. The increase will relieve the existing shortage of power in the area due to which restrictions like staggering of power to tube-wells and for other uses have been in force It will also meet the needs arising from the tube-well construction programme in the area. The 15,000 kW extension at Kanpur will meet additional demand that already exists. Power from the Eastern Area station will be utilised for tube-wells and for meeting the demand of the small towns in eastern U. P.

51. Additions to generating capacity in the private sector are expected to total about 176,000 kW in the period of the Plan. These will consist mainly of extensions to the existing steam stations at Calcutta, Ahmedabad and Lucknow, and a new steam station at Trombay. They will meet the load growth in areas served by these power systems.

A rough estimate has been made below of consumption of electricity by different types of uses in 1950 and 1955 :—

Type of use	Consumption of electricity in million kWh				Percentage increase in 1955 over 1950
	1950	Percentage of total 1950	1955	Percentage of total 1955	
Domestic Light and power	525	13	860	13	64
Commercial Light and power	309	7	430	7	39
Industrial	2,604	63	4,100	63	58
Irrigation	162	4	332	5	105
Other purposes	558	13	752	12	35
TOTAL	4,158	100	6,474	100	56

Note. Industries generate part of their power requirements in their own stations. The above figures indicate only their demands on public utilities. Industries are the largest users of power (taking about two-thirds of the total) followed by domestic and commercial users. Irrigation takes up about 4 per cent of the power consumed. Consumption for irrigation, however, is expected to more than double itself during this period. Industrial demands will increase by about 60 per cent, the increases being due to increased production partly by fuller utilization of the existing capacity in industries like cotton textiles and sugar, and partly by additions to capacity in industries like iron and steel, heavy chemicals, fertilizers and agricultural machinery.

POLICY AND ADMINISTRATION

52. At present irrigation and electricity projects are primarily a responsibility of State Governments with co-ordination provided by the Central Water and Power Commission. In several States, particularly those in which development projects have been under execution during the last 30 years, a high degree of technical, financial and administrative efficiency is obtained. In others, however, the existing organization is not at present capable of executing large projects. The Central Water and Power Commission is being built up to render such assistance to the State Governments as may be required in connection with the planning, design and construction of large irrigation and power projects. The implementation of a plan of the dimensions now set out, calls for such a central organization to —

(*i*) render effective assistance to such State Governments as apply for it in the planning of projects, preparation of detailed designs and specifications or in the execution of works ;

(*ii*) advise on the mechanical equipment needed and the best way of obtaining this ; help in recruiting and training suitable staff for working the equipment ; and arrange for the transfer of machinery and staff from one project to another as may be needed ;

(*iii*) arrange for the training of engineers, in the design and construction of dams and large power plants under construction ;

(*iv*) arrange for the most suitable employment of engineers trained in India and abroad on the construction and execution of large projects ;

(*v*) advise on the recruitment of foreign personnel when required and circulate reports made by foreign and Indian experts to those States in which these reports are likely to be useful ; and

(*vi*) in other ways enable State Governments to maintain high standards in the design, execution and operation of irrigation and power projects.

53. Practically, all the major rivers of India run through more than one State and the supplies in each river can certainly be used with advantage, in almost all cases, by more than one State. To get maximum results, therefore, co-ordination between the requirements of different States is essential. It has been the policy of the Government of India since 1866 that the waters of a river should be utilized to the best possible advantage, in the tracts commanded, irrespective of provincial or State boundaries. The Central Government under the Constitution, is charged with the responsibility of " regulation and development of inter-State rivers and river valleys to the extent to which such regulation and development under the control of the Union is declared by Parliament by law to be expedient in the public interest". The Central Government in consultation with State Governments is considering measures needed to ensure that activities of different States in the same river valley are co-ordinated and that such differences as arise are resolved without undue delay. Recently with a view to the development of the Krishna and Godavari waters, the Governments of Bombay, Madras, Mysore, Hyderabad and Madhya Pradesh, at a meeting convened by the Planning Commission, reached agreements regarding the utilization of the available waters of these two rivers.

54. States can also co-operate with mutual advantage in the development of power particularly from hydro-electric sources. Good sites for hydro-electric power do not exist in every State. Where suitable sites do exist large blocks of power can be produced, all of which cannot be utilized within the State in which the site is located. Co-operation between States for the development of power may be by their jointly developing a hydro-electric power source ; by one State purchasing power in bulk from another ; or by the inter-change of power between different power systems in adjoining States. There are examples of such inter-State co-operation. The Machkund hydro-electric station is being developed by Madras jointly with Orissa. The Bombay Government will be taking bulk power from the Jog hydro-electric power station in Mysore. The power lines of Travancore-Cochin are connected with the Madras Hydro System and a new agreement is being finalized between Madras and Mysore. Such co-operation is also possible in connection with large thermal plants. The Bokaro thermal station is being constructed jointly by Bihar and Bengal through the agency of the Damodar Valley Gorporation. There are possibilities of co-operative utilization by Punjab, Pepsu, Rajasthan, Delhi and U. P. of the power to be developed at Bhakra and by Orissa, Madhya Pradesh and adjoining areas from Hirakud. Such arrangements are to the mutual advantage of participating States and the Central Water and Power Commission should assist in furthering such agreements wherever possible.

55. As soon as practicable, a comprehensive long range plan of inter-connecting the existing and new hydro-electric and thermal stations should be worked out for the country as a whole or for large regions in it and so far as possible each new power project should, subject to economic and technical considerations involved, form part of National Power Systems.

56. The supply of irrigation waters to areas previously undeveloped, or to those which had an indifferent or precarious type of cultivation before, creates new problems. The cultivation of areas hitherto barren creates problems of colonization, of land reform, new townships, new means of communication and transport. Different departments of the Central and State Governments have to co-operate effectively to secure rapid development. Similarly the creation of large blocks of electric power has to be accompanied by efforts to use the energy. For this, new industries have to be set up and agricultural methods and practices have to be adjusted to the availability of cheap power. It is essential that in connection with every large irrigation and power project, State Governments should set up suitable machinery to secure full development as quickly and as effectively as possible.

Economics and Financing of Irrigation Projects

57. Irrigation works are classified broadly as productive or unproductive. Projects, the direct net revenues from which can pay the interest charges on the capital investment are regarded as productive and are financed from public loans. Those that do not comply with this condition are called unproductive and are financed from general revenues or special grants. Irrigation works constructed in recent years, and those that are now under construction or contemplation are much more expensive than those built in the past, partly on account of the comparatively high price level and partly on account of the more difficult and therefore

costly means of making the supplies available, like high dams. For this reason and on account of the increased cost of maintenance and operation of these works, new projects can satisfy the productivity test only if the old revenue structure is suitably modified. It is, therefore, necessary to examine, in some detail, the revenue structure of irrigation projects and the directions in which it should be modified.

58. Charges for water supplies for irrigation from government canals and works are levied differently in different States. In general, such charges comprise one or more of the following elements :

(*a*) *Water-rate*—This is a charge dependent on the kind and extent of crops grown and is based on the quantity of water required by the crop and the advantage derived from the use of it by the cultivator. It has no relation to the cost of supplying the water.

(*b*) *An increment in land revenue*—This is based on the increased benefit derived annually by the landlord on account of provisions of irrigation supplies. It sometimes takes initially the form of water advantage rate or canal advantage rate and is merged with the land revenue at the settlement following the construction of a canal.

(*c*) *Betterment levy*—This represents the government's share in the increase in the value of land that accrues as a result of the provision of irrigation facilities. This is levied only once when irrigation facilities are provided for the first time and the value of the land increases appreciably on this account. It may be recovered in a lump sum or by instalments spread over a number of years or in the form of land.

(*d*) *Irrigation cess*—In areas where irrigation supplies are not required in years or periods of favourable rainfall conditions and are in demand only when the rains fail or are delayed, an annual charge is levied for every acre of the area irrigable from a project whether water is actually taken for irrigation or not.

59. In some States such as Punjab, Pepsu and Rajasthan all irrigation supplies will be used when provided and there is therefore no necessity for levying any irrigation cess ; the entire anticipated water-rate will be recovered every year. In areas where the whole of the irrigable area under a project is irrigated every year with more or less the same kind of crop (for example rice in large parts of southern India), the water-rate can be and is generally amalgamated with the land revenue. On the other hand, in northern India where the entire irrigable area cannot be irrigated every year for want of sufficient water supplies and where the nature of the crop grown varies from year to year, the water-rate has to be distinct from land revenue.

60. As the projects now under construction are considerably more costly than projects executed in the past and also the cost of maintenance and operation is higher than before, State Governments should re-examine the water-rates etc., which they recover from the cultivators for the supplies of irrigation waters. Where the demand for irrigation fluctuates from year to year and the available supplies are not always fully utilized, the levy of an irrigation cess is justified. Where water-rates were determined many years ago and there has since been a considerable increase in the value of the crops produced, there is justification for an increase

in these rates. In fact, it would be sound practice to fix water rates on a sliding scale as a definite function of the value, from time to time, of the out-turn from irrigated crops. Another possible source of income can be agricultural income-tax, the likely yields from which in the period of the plan have been included in the statement of resources.

61. Lands which are irrigated by major projects increase in value substantially and it is certainly equitable that the individuals who derive this " unearned " increment by the efforts of the community at large should be required to share this increment with the community. The price of land, which was originally dry land, increases in every case after the construction of an irrigation project on account of the availability of canal water and with it of assured crops. If the State obtains a share of this unearned increment from the persons who happen to own the land, the proceeds can be utilized in defraying a part of the capital cost of the projects and in this way projects which would otherwise be un-remunerative will become remunerative. Also, such amounts will be available to finance other projects.

62. Betterment fee, or a share in the unearned increase in land values, as a result of irrigation schemes has been levied at various times in the past in India and other countries. A betterment tax has been in vogue in Mysore from as far back as 1888. The contribution per acre is fixed from a third to a half of the difference between the local market values of an acre of dry land and of an acre of wet land. The nature of irrigation supplies, the quality of soil and the agricultural labour available are all taken into account in fixing the market value of wet land. Under the Irwin Canal System, the land owner executes an agreement to pay a contribution of Rs. 150 per acre either by instalments or in a lump sum, a rebate of 7 per cent being allowed in the latter case. A betterment levy was proposed to be levied in 1920 on the Sind Sagar Doab scheme but the construction of the project was postponed. When the project was taken up again as the new Thal Canal (now in West Punjab), it was decided to levy a betterment fee of Rs. 90 per acre.

63. The amount of betterment levy or inclusion fee has sometimes been determined, in the past, on considerations all of which were not relevant. Strictly speaking, betterment fee should not be based on the profits or increased profits from the land irrigated by a project. It may have some relation to the cost of the project but should be based mainly on the increase in the value of the land as a result of the facilities provided by the project. Betterment levy cannot, however, be uniform in all cases ; all the factors that contribute to the increase in land values must be taken into consideration. These factors include soil classification, and nature of irrigation facilities—perennial, non-perennial etc. A Sub-Committee of the Bombay Cabinet proposed that a maximum of 50 per cent of the increase in value of the land should be recovered as a betterment levy, and this proposal has been accepted and embodied in the Bombay Act passed recently.

64. Another important point is the manner of recovery of the betterment levy. This may be effected in one of the following ways :—

(*i*) The total amount in rupees may be recovered in one lump sum.

(*ii*) The total sum to be recovered in cash may be spread over a number of years, depending on the economic condition of the land-owners and their ability to pay, or in

lieu of cash, the levy may take the form of a share in the produce during the period over which the payment is spread. This may assist in overcoming procurement difficulties, so long as procurement remains.

(*iii*) As an alternative to (*i*) and (*ii*) and in lieu of cash recovery, sufficient land may be surrendered by the landowner to Government at the pre-project rates. Where there are large holdings, this is preferable to recovery in cash.

65. An important point to be considered in connection with new irrigation projects is the necessity of preventing speculation in land that occurs when it is decided to proceed with an irrigation project in any area. Different methods have been adopted to reduce speculation in irrigable land and to control land prices. One is to nationalise all land under the project or to purchase the land at the current pre-project rate and then sell it at increased prices after the project is completed. This was contemplated in the Sind Sagar project (Sind Sagar Act of 1902). Another method is to freeze all land coming under the command of the proposed irrigation project. An example of the latter is the anti-speculation law on the Columbia Project in the United States of America. This Act requires landowners to agree to sell holdings over a certain specified maximum area at a fair government appraised price. Water is denied to holdings over this limit and to land over this limit which is sold for more than the fair government appraised price. The Act does not deprive any landowner of his right to buy or sell freely at any price that is landowner's inherent right ; unless the landowner contracts with the Government to comply with the provisions of the Act, water is not supplied to him. In presenting this Bill to the Senate Committee on Irrigation and Reclamation, President Roosevelt indicated that in his judgment "construction of the high dam should be dependent on the elimination of private profits, speculative or otherwise, which would result on the proposed action by the Federal Government." If State governments enact laws for levy of betterment contribution, these by themselves will have the effect of discouraging speculation. In special cases where other steps are needed, the States should announce them before individual projects are sanctioned.

66. The Planning Commission has already recommended to State governments the desirability of taking steps to levy betterment fee on all new irrigation projects. This system is already in vogue in Mysore; Bombay, Hyderabad and Punjab have recently enacted legislation. The Government of Rajasthan have drafted a bill; Madras, Orissa, Uttar Pradesh, West Bengal and Travancore-Cochin have accepted the principle of the levy and are taking steps to promote necessary legislation. We recommend that all State governments who have not so far done this should take steps to promote necessary legislation for levy of betterment fee on all new irrigation projects. Power should be taken to levy betterment contribution in the form of land from the larger holdings. By this means it will be possible to obtain the lands needed for resettling persons whose holdings are submerged by reservoirs; for community use, namely village forests and grazing, markets, roads etc.; for effecting improvements in the agricultural economy by bringing about consolidation of holdings, making uneconomic holdings into economic holdings, assigning lands to landless labourers ; and in other ways. The people in the region should be actively associated with all steps taken for the formulation of schemes of this character and their implementation.

67. There is another manner in which the people residing in areas which will benefit by such projects can be enabled to assist in their execution. The States concerned may raise loans from them, which can be ear-marked for the projects. A scheme is being worked out for this purpose.

Economics and Financing of Power Projects

68. Except in Mysore, all electrical developments in the country up to 1932 were mainly due to private enterprise. It was only in 1933 that State-owned hydro-electric installations were set up one each in Madras and Punjab. Since then State Governments have taken increasing interest in the development of electricity as a State concern. The administration and financing of electricity undertakings by Government followed the usual Public Works Department methods and practice for productive public works. In building up tariffs for the sale of electricity from Government managed schemes, apart from other considerations which are usually taken into account, the total revenue from a scheme has to be higher than the interest, depreciation and operation charges so that the scheme can qualify as a productive public work to be financed from public loans. This has presented no serious difficulty in the past and many government undertakings have generally proved productive.

69. The rate structure or tariff of an electric supply scheme is based on factors and conditions which are well known. It has been accepted in principle that electric supply, being a public utility service, should be run on a no-profit basis and when it is privately managed and operated, the profits should be limited. The Electricity Supply Act (1948) lays down as a reasonable return, 5 per cent on the capital base for all licencees, not being a local authority. The average revenue as realised from different groups of consumers no less by all public electricity undertakings in India in the year 1949 were as follows :—

	All-India average annas per kWh
Residential and commercial	2·47
Large industries	0·65
Electric traction	0·56
Overall	0·96

70. It has been stated before that there is a large scope for the development of electric power in India. It does not follow from this that large blocks of power when produced would be utilised automatically without any effort on the part of the State. The pattern of power utilization has to be laid down in advance and the load development has to be carefully planned for every large generating unit. The development of power generating capacity should be co-ordinated with the development of load. If the lag between power generation and load building is long, interest charges on capital mount up and make the undertaking uneconomic. Load planning for any large power system is integrally related to the industrial and economic planning of the regions within a reasonable distance of the generating station. Carefully

worked out schemes for building up the load must be planned and executed along with schemes of generation. Every State government should set up suitable machinery to secure full development of the load as quickly and effectively as possible.

71. The public utilities in India with the exception of a few have hitherto operated comparatively small blocks of power and they have not always followed an active sales promotion policy. The need for such a policy, particularly in areas where the people are not yet electricity minded, is obvious. Systematic propaganda, special campaigns for the development of load and concessions, and inducements to the people to set up new industries should be a regular feature of all State electricity undertakings in regions where large blocks of power are being produced. A special fund should be set up for this purpose.

Irrigation Development (Ways and Means) Fund

72. In October, 1950, the Planning Commission suggested to State governments the creation of a non-lapsable Irrigation Development Fund. As has been stated previously, since 1866 all productive irrigation works have been financed from public loans raised for the purpose. This policy has been fully justified by the net direct revenue earned by the canals in undivided India, which after deducting cost of maintenance and operation represented about 8 per cent of the outlay. Financing of irrigation projects by loans has however led to difficulties at certain periods. Projects could only be taken up when Government either had surplus funds or could easily raise loans in the market. Such periods generally correspond to periods of high prices. During periods of slump, when prices are low, Governments seldom have surplus funds for development works, and it is equally difficult for them to raise loans during such times. There is another important drawback. Large scale river valley projects involving the construction of high dams and long lengths of canal generally take from four to ten years to complete and it is difficult under such a system to guarantee sufficient funds from year to year to enable the works to be executed on the most economic basis. It happens, therefore, that sometimes projects are rushed through and taken up for construction without full investigation. At other times, after investigations have been completed, projects have to be shelved or postponed for want of finances. In view of these considerations, it is suggested that an Irrigation Development (Ways and Means) Fund should be created by each State government into which a definite sum of money could be paid every year, either from general revenues or from loans or savings and to which should be added loans and grants, if any, from the Central Government and the proceeds of betterment levy, increase of water rates etc. This fund would be non-lapsable and all expenditure on irrigation and power projects should be met from it. This procedure will enable every project to be taken up after full technical and other investigations and thus result in efficiency and economy. Similarly, once a project has been sanctioned, execution of works can be planned carefully and on the most efficient basis without the dislocation caused by the fear of grants lapsing and uncertainty as to availability of funds from year to year.

73. The amount to be paid annually into the proposed non-lapsable Irrigation Development (Ways and Means) Fund by each State will vary from State to State, but it is suggested for consideration that State governments set apart during the next fifteen years such annual sums for this State Fund as will enable them to complete their programmes of irrigation and connected power projects for this period. This proposal aims at improving the ways and means position only and is not meant to effect a change in the existing financial and accounting procedure relating to irrigation works. Their administrative accounts etc., will continue to be maintained in the same manner as before.

74. The Planning Commission has already addressed State Governments in this matter. A number of States, Bihar, Bombay, Madhya Pradesh, Madras, Uttar Pradesh, Mysore and Travancore-Cochin have accepted, in principle, the proposal to create a separate fund for irrigation and power development.

Economic Use of Available Irrigation Supplies

75. While efforts are being made, and will continue to be made to provide new irrigation facilities in all parts of the country, it is necessary to examine the possibilities of putting to better use the supplies available at present. The problem of optimum use of available irrigation supplies has two broad aspects :—

(*i*) *Agricultural*—This consists in determining the optimum quantities of water required, and the correct time of their application for growing a crop with a view to irrigating the maximum area and producing the maximum tonnage of crops with a given quantity of water ; suitable crop rotation ; improved agricultural methods with irrigation etc. A fair amount of research in this respect has been carried out in different parts of the country by Irrigation and Agriculture Departments of various States. The Ministry of Agriculture set up some time ago a Central Standing Advisory Committee for research on water requirements of crops on which there are irrigation engineers, officers of the Indian Council of Agricultural Research and of State Agriculture Departments and experts of the Meteorological Department. This Committee will study systematically such subjects as water requirements of crops in different parts of the country and allied problems like quality of waters, soil survey, rotation of crops etc., and communicate to all concerned the results of such studies.

(*ii*) *Engineering*—This consists in conveying to the field, for purposes of irrigation, as large a proportion as possible of the supplies available at the head of a canal system, by minimising losses in the canal, in the distributaries, water courses and in the field itself. On this aspect, little work appears to have been done to find out exactly what part of the supply let down at the head of a canal is actually applied to crops in the field. Some *ad-hoc* estimates of seepage and evaporation losses in canals, branches, distributaries and water-courses have been made by different officers at different times, but as they were not made on a uniform system evolved before-hand, the results may not be regarded as possessing the required degree of accuracy. From the results available, it appears that of the water let in at the head of a canal system about 16 per cent is lost in the canals and branches ; about 6 per cent in distributaries and about

23 per cent in water courses, thus leaving only 55 per cent to reach the field. Though these estimates are only approximate, it would be correct to say that if absorption losses in the canals, distributaries and water-courses are reduced, considerable additional areas can be provided with irrigation facilities from the water already available.

76. Absorption losses on canals, branches and distributaries can be reduced by lining them. There are, however, technical and practical difficulties in undertaking the lining of large canals and distributaries in operation ; but it should be possible to arrange in due course for the lining of such of the existing canals and distributaries as can be attended to. New canals present no such difficulties and many of them are being lined.

77. Absorption losses in water-courses are approximately 40 per cent of the water actually applied to the field and it is estimated that nearly three-fourths of these losses can be prevented by lining them. The advantages of such lining should be examined carefully. As water courses in most cases belong to the cultivators the funds for lining should come from them. With a suitable lining material, it should be possible to undertake this work, at least in some areas if the cultivators agree to pay for the purpose a moderate cess. Apart from saving large quantities of water for additional irrigation this will secure to cultivators two other substantial benefits. It will reduce maintenance, and also make it possible for them to reclaim a portion of the land now under water courses as a lined water-course generally takes less space than unlined channels. There are tanks in central and southern India below which there are no water-courses. Under such a system, there is wastage of water by absorption over the wide expanse on which irrigation waters flow from one field to another. It will lead to economy of water, if properly aligned water-courses can be constructed below such sluices or outlets where they do not exist.

78. Apart from the losses in irrigation channels, there is wastage of water in the field itself. It is well-known that the duty of irrigation water from a well is much more than that of canal water. The reason is that in a system of well irrigation the field to be irrigated is invariably divided into small compartments for purposes of irrigation and the absorption during the process of irrigating such small compartments is comparatively low. On the other hand, water from a canal or a tank is generally let over a large field and considerable quantities are absorbed in the portion of the field already irrigated before water can reach the more distant parts of the field. It has been worked out, mathematically, that for alluvial soil, optimum conditions prevail when the size of the field in acres is from 1/4th to 1/5th of the discharge of the water-course in cusecs. Steps should be taken to educate the cultivators on this subject. Distribution of water amongst the various cultivators in a *chak* (area irrigated from an outlet), is generally carried out by what is known as *warabandi* in northern India. There are two such systems one termed the " fixed system " in which each holding gets water for a definite period according to its size once a week, on the same day, at the same time, the other called the " follow-on system " in which each cultivator takes water in turn for a fixed period depending upon the area and location of his holding and then hands it over to the next on the roster. If *warabandi* can be framed so that starting from the outlet water always flows onward, great saving in absorption losses will result.

79. The Planning Commission has already addressed the State Governments on this subject. State Governments, cultivators and all those connected with irrigation developmen should give thought to the suggestions made above, examine the economics of such proposals, and carry them out wherever possible.

Major and Minor Irrigation Projects

80. Questions are often raised about (*i*) the relative place assigned to major and minor irrigation schemes in the Plan, and (*ii*) the economics of such schemes. There can be no conflict between major and minor schemes. There are parts of the country in which scope exists for large projects and there are others in which only smaller projects are possible. Each area should be served by the kind of schemes for which it offers facilities. Large and small projects are thus complementary and not competitive. The Five Year Plan includes eight irrigation projects (including multi-purpose projects but excluding new major irrigation projects mentioned in para 45) costing above Rs. 5 crores each, sixteen costing between Rs. 1 crore and Rs. 5 crores ; twenty-one costing between Rs. 1 crore and Rs. 50 lakhs ; and twenty-seven schemes costing between Rs. 50 lakhs and Rs. 10 lakhs each. The area which will be irrigated in the five year period by these projects, is expected to be about eight million acres while about 7 million acres are expected to be irrigated by minor irrigation projects and tube-well schemes included in the Plan.

81. The relative advantages and disadvantages of minor and major schemes may be briefly summarised as follows :

Minor schemes are advantageous in that

(*i*) the initial outlay involved is small ;
(*ii*) they can be executed quickly and yield quick results ;
(*iii*) they generally require no special assistance by way of foreign personnel or equipment ; and
(*iv*) local resources can be easily mobilised for their execution.

The disadvantages, on the other hand, are :

(*i*) their high cost of maintenance ;
(*ii*) their relatively short life ; and
(*iii*) the limited ' protection ' they give.

Owing to the operation of these causes, a fair proportion of such works are now in various stages of disrepair all over the country. Experience in India is that minor irrigation works can be maintained only if the beneficiaries undertake the obligation for this. At the same time where there are laws imposing such obligations it has not been found possible to enforce them strictly.

82. The advantages of major schemes are :

(*i*) they are generally multi-purpose in nature, *i.e.*, apart from irrigation they confer other benefits such as hydro-electric power, flood control, navigation, etc.

(*ii*) they utilise surplus waters of the river system which are flowing waste at present and in fact they constitute the only way in which such surplus waters can be utilised ;

(*iii*) they give better protection in years of scarcity as there are large catchment areas.

The disadvantages are the initial high cost and the time they take for execution. The financial aspects vary from region to region.

In so far as the large multi-purpose projects in progress are concerned, their construction has not reached a stage at which final forecasts of financial yields can be made. It can however be stated that these projects can be financially justified only if the following conditions are strictly enforced : (*i*) There should be strict financial control and costs kept down as low as possible; (*ii*) Betterment contributions should be levied on the areas that will be irrigated ; (*iii*) Water rates should be levied which would be appreciably higher than the rates in the older projects, and more in accordance with present price levels ; (*iv*) Power generation should be regulated carefully and capital should not be sunk on electric plant much in advance of ascertained needs ; and (*v*) Power should also be sold at economic rates.

Conditions for Inclusion of New Projects in Future Plans

83. We consider it necessary to prescribe a procedure for determining what new projects should be taken up hereafter and in general for fixing the order of priority of various projects under consideration in different parts of the country. As has been stated earlier, the construction of new irrigation and power project is a matter of national interest and it is necessary to ensure that no large project is undertaken without the State Government concerned satisfying itself that investigations on the project are sufficiently detailed, that the financial forecast is accurate and that funds are available for the execution of the project according to the most economical programme. Only in this manner can we avoid the situation that has arisen in the last few years, under which a number of projects have been simultaneously taken up in different states without careful project reports and financial and other estimates, or an assessment of their aggregate effects on the overall economy of the country.

84. There is no doubt that irrigation and electricity are subjects in the State field of activity and that the State Governments must continue to exercise full initiative in regard to schemes of development. In view, however, of the existing financial position, and other limitations, it is necessary that the Central Government and State Governments should act together in the implementation of such programmes. The first step in this direction was taken some time ago when the Government of India suggested to the State Governments not to undertake any new commitment for capital expenditure and requested them to obtain the prior concurrence of the Central Government before taking up new projects costing over rupees one crore.

85. For determining the priority of irrigation and power projects *inter se*, the following broad principles must be observed—

(1) A project for inclusion in a plan must have been investigated in sufficient detail as provided in the rules issued by the Government of India in 1929, in connection with the preparation of projects the cost of which exceeded the then powers of sanction of provincial Govern-

ments (Rs. 50 lakhs). These rules are incorporated in the departmental codes of State Governments, some of whom have also issued additional detailed instructions. It is imperative that before a project is administratively approved by a State Government, all preliminary investigations relating to the availability of water, the broad features of the design, the approximate cost, the availability and suitability of land for irrigation, the ability of the land owners and cultivators to pay the proposed betterment contributions and water charges etc., in the case of irrigation projects, and the probability of finding load for the power to be developed and the necessary machinery etc., for its utilisation in case of power projects, have all been properly carried out and detailed financial statements worked out in accordance with the standard forms prescribed for the purpose. Before according administrative sanction to any project, its economics must be carefully studied and examined by the State Government.

(2) Projects which will add to the food production in the country must receive priority over projects relating to other uses of river waters.

(3) Projects which are more remunerative in direct financial returns, in terms of cost of irrigation per acre or per unit of power generated and in total benefit to the community, and those which would yield quick results should be given preference.

(4) In any power project based on the use of coal, the possibility of using low grade coals, if available in the neighbourhood, must invariably be examined. Similarly the use of middlings from coal washeries etc., should be encouraged for the development of power. It is possible now to design furnances to use such low grade high-ash-content coals. These remarks also apply to extension to or replacements of existing power plants.

(5) Region-wise requirements of food and power must receive due consideration, and also the need of backward areas.

86. Having laid down the broad principles which should determine the priority of a project for inclusion in the Plan, we think that an appropriate body should be set up to advise on the relative priority of different projects on an all-India basis after examining the projects and satisfying itself that the schemes have been prepared after detailed investigation, that the estimates are reasonably correct and that the financial forecasts are reliable. Only those schemes would be eligible for consideration which have been fully investigated and are ready for execution. This body should consist of :

(*i*) A chairman to be appointed by the Government of India.
(*ii*) Additional Secretary, Ministry of Irrigation and Power.
(*iii*) A representative of the Ministry of Finance.
(*iv*) President, Central Board of Irrigation and Power.
(*v*) One engineer not in the service of any government in India.

The Chief Engineer of the State concerned will be co-opted as a member when a project prepared by him is being examined.

87. The procedure to be followed should be as follows :—

(*i*) As soon as a project has been fully investigated and project report prepared, the State Government concerned should send copies of the report and accompanying documents to the Committee.

(*ii*) The Committee will have the scheme technically examined by the Central Water and Power Commission in the first instance to see whether :

(*a*) all necessary investigations have been carried out,

(*b*) the estimates of expenditure are reasonably correct, and

(*c*) the estimates of revenue are based on adequate data.

The Central Water and Power Commission will make its examination of each project in close consultation with the Chief Engineer in charge, and where necessary with officers of the Central Ministry concerned.

(*iii*) A copy of the report of the Central Water and Power Commission should then be made available to the State Government concerned who, if they like, may send a further note to the Committee.

(*iv*) The Committee will then proceed to examine the scheme and will submit its report to the Government of India.

Hydrologic Investigations

88. During the next 15 to 20 years, a large number of irrigation and power projects have to be undertaken. Before work can be taken up on any such large project, it is necessary to collect detailed data about the availability of water and the manner in which available supplies vary from year to year and during different periods in the same year. This information, which for proper designs should be available for 30 to 50 years, has to be supplemented with rainfall data of the catchment area, the distribution of rainfall, its intensity, temperature, regeneration in the river etc. Unfortunately, there has been no systematic collection of basic hydrologic data for the rivers of India. State Governments during the last 20 to 30 years have undertaken collection and study of data with reference to individual projects under operation or under consideration but no overall study of a river system or its catchment has been attempted. Lack of hydrologic data can lead to defective designs.

We, therefore, recommend that all State Governments should carry out detailed hydrologic investigations for important river systems. The expenditure on these investigations is small when compared with the benefits likely to be achieved when the river or any part of it is developed. The Central Water and Power Commission should prepare necessary technical instructions for the collection of basic hydrologic data in consultation with the States and the State Governments should set up arrangements for collecting such data.

Rural Electrification

89. It has been stated in paragraph 23 above that the development of electricity in India has so far been mainly urban, and hardly 10 per cent of the country's population enjoy the benefits of electricity. Under the Plan, large blocks of power will become available for rural areas and State Governments should take steps to see that villagers are enabled to utilize these to the best advantage.

Experience has shown that, given the necessary facilities, the use of electric power for agricultural operations would be popular. As electricity is extended to the villages, there is no doubt that farmers will use it more and more for agricultural operations other than pumping etc., and in the processing of agricultural produce. In this, they should receive assistance from government in the shape of loans to enable them to have their premises fitted with electricity and to buy electric appliances for work now done by animal or manual labour. A scheme similar to that introduced by the Rural Electric Administration of the U. S. A. will have to be introduced under which long term loans should be given to village co-operatives for rural electrification and development. Electricity will also assist cottage industries. It was estimated in 1942 that about 12,000 power looms were operating in the villages of undivided India of which more than half were in the then Bombay Presidency. The total number of handlooms in India in 1942 was estimated at 200 times the number of powerlooms. If power can be supplied over a small proportion of these their production would increase. Loans should be made available for such purposes as well.

90. There is a special advantage in the encouragement of agricultural load. It has been estimated that the utilisation of one kW of power in industry requires an investment of about Rs. 3,000. On the other hand, the utilisation of 1 kW of electric power in agriculture requires a much smaller capital investment of about Rs. 1,200 per unit. Apart from this, most of the equipment required can be produced in the country and its operation does not require technical skill of a high order.

PUBLIC CO-OPERATION

91. We have elsewhere dwelt in detail on the need for arousing public enthusiasm for and securing public co-operation in the implementation on the Plan. Here it is proposed to refer more specifically to the special aspects of public co-operation in connection with the development of major irrigation, and power projects. What is essential is that the people in every area should feel that the project included in the Plan is their own—intended for improvement of conditions in their area—and that they should make special sacrifices for getting it completed. The ways in which such public co-operation can be obtained vary from region to region and it should be the aim of State Governments to see that this is secured in the largest measure possible. We have already referred to the levy of betterment contribution. Large schemes cannot be financed unless this principle is accepted and adequate levies are made towards the capital cost. It is estimated that under a suitable system between one-third and one-fourth of the capital cost of a project can be recouped by betterment levies. The levy of betterment contribution in the form of land from the larger holdings will also be useful. By this means, it will be possible to obtain lands needed for community use, for village forests and grazing, markets, etc., to bring about consolidation of holdings ; to find lands for assignment to landless labourers and in other ways to effect improvement in the agricultural economy of the villages commanded by the project.

92. There is also another way in which the traditional methods of carrying out such projects can be improved. In framing estimates for works like a canal system, on which unskilled labour is employed, the rule should be to fix the rates on the basis that work is done by the villagers on the canals in their own villages, and not on the basis of work being let to contractors, large

or small. Villagers should be organised in co-operatives for taking up such work. By this means there will be appreciable reduction in the cost and the labour force in the villages will benefit by the payments made. The State Government and local leaders should devote their best efforts to the task of obtaining local co-operation in as many forms as possible in the execution of large projects. The Planning Commission held discussions on this subject with officers of the Punjab Government connected with the Bhakra-Nangal Project and a beginning has been made with the introduction of this system for the excavation of Bhakra canals. The Bombay and the Madras Governments have this system in operation on some of their projects. The Rajasthan and the Madhya Bharat Governments have agreed that this system will be adopted throughout the canal system of the Chambal Valley Project. Other states have also accepted the principle and the Planning Commission hopes that this will become a normal feature in all large projects.

93. In paragraph 75 above, we have given some suggestions for making the most economic use of available irrigation supplies. Most of these suggestions can be adopted only with a large measure of public co-operation and all efforts must be made to arouse public enthusiasm to use the water provided by the State irrigation works to maximum advantage.

94. It is not fully appreciated that private irrigation works have in the past made a substantial contribution to the development of irrigation in India. There is no doubt that large irrigation projects should be executed by States but every effort should be made to encourage associations of landholders or village co-operatives to undertake small irrigation schemes, tanks, etc., for purposes of irrigation. Out of 50 million acres that are irrigated annually in India (see Table 2) about 13 million acres are irrigated by private wells and 2 million acres by private canals. In the chapters on Agricultural Development we have made our proposals for new developments in this field. There is, however, an important aspect which we would like to refer here. A fairly large proportion of these private irrigation works, which generally comprise village tanks and small canals are allowed to fall out of repair or disuse for a variety of reasons among which are disputes among owners, and village factions. In recent years large sums of public money have been spent in different parts of the country in resuscitating these old abandoned private irrigation works. The Plan also provides for substantial assistance in this direction. It is important in the national interest that all private irrigation works which are now being constructed or resuscitated should continue to be maintained with a reasonable standard of efficiency. The co-operation of the people must be sought in this endeavour. The methods to be adopted for securing the continued efficiency of these private irrigation works must vary from one part of the country to another. We recommend that States should take effective steps in this matter, if need be by promoting legislation for this purpose in accordance with local conditions.

95. For the successful implementation of any power project, a large measure of public co-operation is in all cases necessary for building up the load for the utilisation of the power generated. Apart from this, in the case of some industries it is considered advisable and at times advantageous for the industry to have its own generating plant. It may be possible to integrate such power houses or in any case the surplus capacity of such power houses with the nearest public electric supply undertaking to the mutual advantage of both the industry and the electricity undertaking.

TABLE I

List of Principal Irrigation Works of India

(referred to in paragraph 13)

Name of State	Name of Work	Year of completion	Total capital outlay (Rs. in lakhs)	Area irrigated (thousand acres)	Percentage return on capital outlay
Bihar	Son Canals	1875	2,68	655	7·3
	Tribeni Canal	1914	82	114	3·1
Bombay	Nira left-bank Canal	1906	1,48	90	4·7
	Godavari Canals	1916	1,07	63	4·2
	Pravara Canals	1926	1,51	90	..
	Nira right-bank Canals	1938	4,12	89	1·8
Madhya Pradesh	Tandula Canals	1925	1,20	158	..
	Mahanadi Canals	1927	1,59	199	..
Madras	Cauvery delta system	1889	87	1,070	13·9
	Godavari delta system	1890	2,10	1,229	12·1
	Kurnool Cuddapah Canal	..	2,34	88	0·8
	Pennar river canals	1894	71	178	6·5
	Periyar system	1897	1,08	202	5·6
	Krishna delta system	1898	2,27	1,002	15·7
	Lower Coleroon anicut	1903	30	123	10·1
	Krishna east-bank Canal Extensions.	1913	59	100	7·8
	Cauvery-Mettur Project	1934	6,46	232	1·7
Orissa	Orissa Canals	1895	2,72	233	..
Punjab (I)	Western Jumna Canal	1820	2,04	1,018	8·1
	Upper Bari Doab Canal	1879	..	783	20·9
	Sirhind Canal	1884	2,67	2,312	14·6
	Eastern Canal	1928	1,14	190	..
Uttar Pradesh	Eastern Jumna Canal	1831	66	446	63·2
	Ganga Canal	1856	4,66	1,620	25·2
	Agra Canal	1875	1,29	343	4·6
	Lower Ganga Canal	1880	4,67	1,251	8·6
	Betwa Canal	1893	1,24	221	1·0
	Ken Canal	1909	67	140	5·4
	Sarda Canal	1930	11,57	1,297	2·9
	Tube-wells	..	4,49	936	1·6
West Bengal	Damodar Canals	..	1,28	184	..
	Midnapore Canals	..	85	74	..
Hyderabad	Nizamsagar Canal	1940	4,72	275	..
Mysore	Krishnarajasagar Canals	1932	2,60	92	..

TABLE

Area Cultivated and Irrigated in
(referred to in paragraphs

Sl. No.	Name of State	Gross area	Classified area	Culturable area	Sown area
1	2	3	4	5	6
	Part 'A' States				
1.	Assam	54,404	33,400	24,109	6,192
2.	Bihar	45,011	44,330	31,338	22,607
3.	Bombay	71,318	58,059	34,735	34,473
4.	Madhya Pradesh	83,374	82,991	42,406	32,305
5.	Madras	81,785	80,796	52,108	35,796
6.	Orissa	38,487	18,053	10,980	7,451
7.	Punjab (I)	23,922	23,236	16,117	13,337
8.	Uttar Pradesh	72,581	71,428	52,605	39,780
9.	West Bengal	19,696	19,549	13,609	12,978
	TOTAL	490,578	431,842	278,007	204,919
	Part 'B' States				
10.	Hyderabad	52,588	52,927	38,507	22,530
11.	Jammu & Kashmir	59,379	3,360	3,443	1,301
12.	Madhya Bharat	29,746	22,552	12,091	9,691
13.	Mysore	18,873	17,385	10,286	6,596
14.	Pepsu	6,450	6,491	5,772	4,844
15.	Rajasthan	83,332	20,669	7,541	9,450
16.	Saurashtra	13,729	1,397	7,200	1,013
17.	Travancore-Cochin	5,852	5,350	3,254	3,046
	TOTAL	269,949	130,131	88,094	58,471
	Part 'C' States				
18.	Ajmer	1,547	1,561	868	388
19.	Bhopal	4,402	4,432	2,522	1,062
20.	Bilaspur	290	285	80	124
21.	Coorg	1,015	1,012	321	166
22.	Delhi	370	366	286	256
23.	Himachal Pradesh	6,689	2,305	398	..
24.	Kutch	10,703	4,974	..	245
25.	Manipur	5,582	..	..	..
26.	Tripura	2,580	2,634	351	472
27.	Vindhya Pradesh	15,106	1,610	..	520
28.	Sikkim	1,757	..	..	..
29.	Andaman and Nicobar Islands	2,012	..	..	..
	TOTAL	52,053	19,179	4,826	3,233
	GRAND TOTAL	812,580	581,152	370,927	266,623

2
Different States of India
13 and 15)

(Figures in Cols. 3 to 13 are in thousands of acres)

Sl. No.	Name of State	Area irrigated (1949-50) By Govt. canals	By tanks	By Govt. works 7+8	By private canals	By wells
		7	8	9	10	11
	Pate 'A' States					
1.	Assam	2	22	24	655	..
2.	Bihar	821	1,136	1,957	..	583
3.	Bombay	378	154	532	64	1,035
4.	Madhya Pradesh	269	1,140	1,409	..	206
5.	Madras	4,410	3,226	7,636	156	1,959
6.	Orissa	367	473	840	53	34
7.	Punjab (I)	3,636	7	3,643	337	1,845
8.	Uttar Pradesh	4,571**	12**	4,583**	16**	4,323**
9.	West Bengal	279	1,035	1,314	304	15
	TOTAL	14,733	7,205	21,938	1,584	10,000
	Part 'B' States					
10.	Hyderabad	173	834	1,007	13	418
11.	Jammu and Kashmir	97	5	102	516	8
12.	Madhya Bharat	135	36	171	..	280
13.	Mysore	262	611	873	3	85
14.	Pepsu	1,297*	..	1,297	24*	618*
15.	Rajasthan	631	70	701	11	672
16.	Saurashtra	3	..	3	..	60
17.	Travancore-Cochin	365	123	488	91	33
	TOTAL	2,963	1,679	4,642	658	2,174
	Part 'C' States					
18.	Ajmer	..	16	16	..	99
19.	Bhopal	2	1	3	..	11
20.	Bilaspur	..	..	..	5	..
21.	Coorg	4	2	6	..	..
22.	Delhi	27	4	31	..	19
23.	Himachal Pradesh	..	..	..	..	..
24.	Kutch	..	9	9	..	60
25.	Manipur	..	..	..	..	..
26.	Tripura	..	..	..	..	..
27.	Vindhya Pradesh	37*	17*	54	..*	164*
28.	Sikkim	..	..	..	..	..
29.	Andaman and Nicobar Islands	..	..	..	..	..
	TOTAL	70	49	119	5	353
	GRAND TOTAL	17,766	8,933	26,699	2,247	12,427

*Figures are for the year 1948-49.
**Figures are for the year 1950-51.

TABLE

Area Cultivated and Irrigated in

(Referred to in paragraphs

Sl. No.	Name of State	Area irrigated (1949-50) By other sources	Grand Total 9+10+11+12	Percentage of area Sown to culturable Col. 6 / Col. 5	Irrigated to sown Col. 13 / Col. 6	Irrigated to culturable Col. 13 / Col. 5
		12	13	14	15	16
	Part 'A' States					
1.	Assam	403	1,082	26	17	4
2.	Bihar	1,740	4,280	72	19	14
3.	Bombay	129	1,760	99	5	5
4.	Madhya Pradesh	71	1,686	76	5	4
5.	Madras	320	10,070	69	28	19
6.	Orissa	678	1,605	68	22	15
7.	Punjab (I)	21	5,846	83	44	36
8.	Uttar Pradesh	1,882	10,803	76	27	21
9.	West Bengal	680	2,313	95	16	15
	TOTAL	5,924	39,446	78	19	14
	Part 'B' States					
10.	Hyderabad	50	1,488	58	7	4
11.	Jammu & Kashmir	75	701	38	54	20
12.	Madhya Bharat	11	462	80	5	4
13.	Mysore	198	1,159	64	18	11
14.	Pepsu	20*	1,959	84	40	32
15.	Rajasthan	89	1,473	125	16	20
16.	Saurashtra	4	67	14	7	1
17.	Travancore-Cochin	500	1,112	94	87	34
	TOTAL	947	8,421	66	15	10

* Figures are for the year 1948-49.

2—*contd.*

Different States of India

13 and 15)

(Figures in Col. 15 are in thousands of acres)

Sl. No.	Name of State	Area irrigated (1949-50)		Percentage of area		
		By other sources	Grand Total 9+10+11+12	Sown to culturable Col. 6	Irrigated to sown Col. 13	Irrigated to culturable Col. 13
				Col. 5	Col. 6	Col. 5
		12	13	14	15	16
Part 'C' States						
18.	Ajmer	1	116	42	30	13
19.	Bhopal	3	17	42	2	1
20.	Bilaspur	..	5	—	..	6
21.	Coorg	1	7	52	4	2
22.	Delhi	—	50	90	19	17
23.	Himachal Pradesh	135	135	—	—	38
24.	Kutch	—	69	—	34	—
25.	Manipur	—	—	—	—	—
26.	Tripura	..	..	—	—	—
27.	Vindhya Pradesh	**	219	—	42	..
28.	Sikkim	..	..	..	..	..
29.	Andaman and Nicobar Islands	..	..	..	..	..
	TOTAL	141	618	..	..	..
	GRAND TOTAL	7,012	48,486	75	18	13

**Figures are for the year 1950-51.

TABLE

T—

H—

Major (Existing) Power utilities only as on

(Referred to in

State/Name of power system and year of commencement of supply	Installed capacity (thousand kWh)		Transmission lines 33 kV. and above (circuit miles)	Operation Statistics: Units generated (million kWh)	Maximum Demand (thousand kWh)	Annual load factor in percent.
Bihar						
Sijuah (Jherriah) Electric Supply Coy. Ltd. (1916) . . .	18	(T)	..	80	15	61
Patna Electric Supply Coy. (1929)	13*	(T)	..	29	7	49
Bombay						
Ahmedabad Electricity Coy Ltd. (1915).	97	(T)	..	292	64	52
Kalyan (Chola) Power Station .	40	(T)	..	..	..	..
Tata Hydro-Electric Agencies (1915).	244	(H)	502	1448	254	65
Madhya Pradesh						
Jubbulpore Electric Coy. Ltd. (1927).	9	(T)	..	21	5	48
Madras						
Madras City Electricity System (1909).	48	(T)	47	130	28	52
Pykara (1932) . . .	39	(H)	1901	234	44	61
Mettur (1937)	40	H		221	46	55
Papanasam (1938) . .	23	(H)		135	32	55
	4	(T)				
Punjab						
Jogindernagar (1933) . .	48	(H)	429	174	35	57

3 .

THERMAL

HYDRO

Stations in India (Public

31*st December*, 1951)

paragraph 22)

State/Name of Power system and year of commencement of supply	Installed capacity (thousand kWh)	Transmission lines 33 kV. and above (circuit miles)	Operation Statistics: Units generated (million kWh)	Maximum Demand (thousand kWh)	Annual load factor in per-cent.
Uttar Pradesh					
Allahabad Power Station (1916) .	12 (T)	..	28	6	54
Lucknow Power Station (1917) .	14 (T)	..	39	8	55
Kanpur Electric Supply Administration (1921).	64 (T)	..	188	36	60
Ganga Canal Grid (1926) . .	19 (H) 30 (T)	..	211	38	63
West Bengal					
Calcutta Electric Supply (1899) .	467 (T)	165	1032	246	48
Gourepore Electric Supply Co. Ltd. (1921).	53 (T)	..	77	23	38
Dishergarh Power Supply Co. Ltd. (1922).	16 (T)	..	58	9	71
Hyderabad					
Hussain Sagar Station (1910) .	22 (T)	..	47*	10*	53
Mysore					
Shimshapura	17				
Sivasamudram (1902) . .	42	(H) 1499	525	121	50
Jog (1948)	48				
Travancore-Cochin					
Pallivasal (1940) . . .	28 (H)	..	152	28	61
Delhi					
Delhi Power Station (1908) . .	43 (T)	..	140*	28*	57

*Estimated.

TABLE 4

Per capita Use of Electricity in the States of India

(Referred to in paragraph 22)

Name of State	Population (millions) (1941 Census)	Total installed capacity (kW)	Capacity installed per 1000 of population (kW)	Units generated (million kW)	kWH Generated per capita
1	2	3	4	5	6
Assam	9·689	3,362	0·247	5·777	0·633
Bihar	40·219	44,978	1·18	126·125	3·131
Bombay . . .	35·944	416,185	11·579	1612·378	44·858
Madhya Pradesh . .	21·328	27,844	1·306	64·273	3·014
Madras . . .	56·952	168,025	2·950	643·708	11·303
Orissa	14·644	4,616	0·315	5·693	0·389
Punjab (I) . .	12·639	61,377	4·856	178·127	14·093
Uttar Pradesh . .	63·254	183,841	2·911	510·671	8·073
West Bengal . .	24·787	522,294	21·071	1046·758	42·230
Hyderabad . . .	18·653	21,073	1·129	46·470	2·491
Mysore . . .	9·072	107,200	11·817	443·522	48·889
Madhya Bharat . .	7·942	13,688	1·723	29·298	3·689
Rajasthan . . .	15·298	24,120	1·576	44·810	2·929
Pepsu . . .	3·469	6,740	1·943	5·679	1·637
Saurashtra . .	4·136	21,893	5·291	35·818	8·660
Travancore-Cochin .	9·265	34,586	3·732	147·305	15·899
Delhi . . .	1·744	37,536	21·523	122·302	70·127

TABLE 5

Irrigation and Power Projects in the Five Year Plan

Abstract

	Expenditure proposed during 1951-56 (Rs. lakhs)			Irrigation ('000 acres)		Power (000 kW)	
	Irrigation	Power	Total	By 1955-56	On Completion	By 1955-56	On Completion
Multi-purpose projects							
Bhakra-Nangal	...	...	77,50	1,361	3,604	96	144
Harike	...	...	10,62	...	...	...	...
Damodar Valley	...	...	41,70	595	1,141	194	274
Hirakud	...	...	44,00	261	1,785	48	123
Additional funds for the above Projects.	...	...	50,00	...	...	...	...
New Schemes	...	...	40,00	(See paragraph 45)			
TOTAL	...	...	263,82	2,217	6,530	338	541
Part 'A' States							
Assam	2,00	83	2,83	218	218	5	7
Bihar	9,73	7,09	16,82	675	777	11	11
Bombay	22,69	10,43	33,12	474	893	83	84
Madhya Pradesh	3,08	6,00	9,08	114	184	73	73
Madras	34,08	50,24	84,32	435	608	196	307
Orissa	3,00	3,91	6,91	480	480	8	8
Punjab	3,26	38	3,64	666	774	...	...
Uttar Pradesh	19,11	14,10	33,21	1,361	3,181	109	124
West Bengal	15,37	76	16,13	917	917	4	4
TOTAL	112,33	93,74	206,07	5,340	8,032	489	618
Part 'B' States							
Hyderabad	24,79	3,21	28,00	306	731	53	53
Jammu and Kashmir	2,06	1,55	3,60	76	169	7	7
Madhya Bharat	3,28	2,28	5,56	83	152	15	18
Mysore	7,16	12,68	19,84	30	250	72	120
Pepsu	34	30	65	...	129	...	...
Rajasthan	5,04	41	5,45	243	523	11	11
Saurashtra	4,75	2,13	6,88	108	120	12	12
Travancore-Cochin	4,78	10,35	15,13	17	168	81	81
TOTAL	52,20	32,91	85,10	863	2,242	251	302
Part 'C' States							
Ajmer	11	...	11	...	...	...	...
Bhopal	...	28	28	...	...	...	...
Coorg	...	25	25	...	...	...	...
Himachal Pradesh	80	13	93	75	100	1	1
Kutch	91	23	1,14	38	38	...	...
Tripura	...	7	7	...	...	...	...
Manipur	...	12	12	...	...	...	...
Vindhya Pradesh	...	51	51	...	...	3	3
TOTAL	1,82	1,59	3,41	113	138	4	4
GRAND TOTAL	...	...	558,41	8,533	16,942	1082	1465

CHAPTER XXVII

DEVELOPMENT OF MINERAL RESOURCES

Assessment of Mineral Resources

In the last four years, the Government have laid the foundation for mineral development by (*i*) the announcement of a mineral policy, (*ii*) the expansion of the Geological Survey of India for implementing a programme of mineral exploration and development, and (*iii*) the establishment of a Bureau of Mines for securing coordinated development with due regard to conservation of the country's mineral assets.

2. It should be made clear at the outset that though progress has been made in the survey of mineralised areas in recent years and the principal mineral regions have been ascertained, exploration of mineral resources has not been thorough or complete in most cases and present estimates are rough guesses. The Plan, therefore, provides for systematic detailed investigation and surveys by the Geological Survey of India, the Bureau of Mines and the National Laboratories for the quantitative and qualitative assessment of the country's reserves of important minerals.

3. The mineral wealth of India as at present known, though by no means inexhaustible, comprises an adequate range of useful products that are necessary for the industrial development of the country. An appraisal of the reserves shows that while in respect of minerals essential for basic industries—coal and iron—the reserves are ample, the country is deficient in a fairly long list of vital minerals like ores of copper, tin, lead, zinc, nickel, cobalt and in sulphur and most important of all, petroleum. The position with regard to aluminium ore, refractories, abrasives, limestone etc., may be considered as fairly adequate while in respect of titanium and thorium ores and of mica, the country has considerable reserves.

4. Until recently, mineral exploration and their utilisation in the country received little attention. Except for coal, iron ore and petroleum required for internal use, the majority of minerals were raised in India for purposes of bulk export without any dressing, processing and fabrication. These exports brought but a small return to the country. Nearly a 100 minerals are known to be produced or worked in India of which nearly 30 may be considered more important including several which although comparatively unimportant in quantity today, are capable of material development in future with the expansion of industries.

5. An idea of India's mineral resources, their adequacy, deficiency and present production is given below :—

Minerals which are adequate for India's requirements

		Production		Exports	
		1950	1951	1950	1951
Bauxite	'000 tons . .	64	67	...	...
Coal	'000 tons . .	32,307	34,431	903	1,908
Ilmenite	'000 tons . .	212	220	Entirely exported	

		Production		Exports	
		1950	1951	1950	1951
Iron ore	'000 tons	2,971	3,657	30	300
Kyanite	'000 tons	35	42	33	25
Sillimanite	'000 tons	1	4	...	3
Magnesite	'000 tons	53	117	16	46
Manganese ore	'000 tons	883	1,284	808	952
Mica	'000 cwts.	*	*	326	491

It will be seen from the above that coal, iron ore, manganese ore, mica, ilmenite and kyanite are produced in quantities of real importance to industry and other sectors of economy. Of these, mica, manganese ore, kyanite and ilmenite are wholly or largely exported.

The table below shows the position in respect of certain minerals in which India has fairly adequate supplies, though not in all cases sufficient to meet the requirements.

		Production		Exports	
		1950	1951	1950	1951
Barytes	'000 tons	12	8	8	5
China clay	'000 tons	53	55	...	....
Other clays	'000 tons	277	291	...	...
Felspar	'000 tons	1	3	...	...
Chromite	'000 tons	17	16	4	9
Gold	'000 oz.	197		...	...
Gypsum	'000 tons	206	204	...	...
Salt	'000 tons	2,573	2,642	8	18

In respect of the following key minerals and metals, India has to depend either wholly or in a large measure on foreign sources of supply because of poor resources:—

		Production		Imports	
		1950	1951	1950	1951
Copper	'000 tons	6·6	7·1	41·8	8·6
Graphite	'000 tons	1·5	1·6	0·8	0·7
Lead Ore (concentrates)	'000 tons	1·9	1·8	...	...
Lead (pig)	'000 tons	0·6	0·8	15·4	7·9
Petroleum (crude) / Petroleum products	mil. gals.	...	...	780·8	869·0
Mercury	mil. lbs.	...	...	2·4	0·7
Sulphur	'000 cwts.	...	...	1,138·0	770·1
Tin	'000 cwts.	...	...	95·4	59·2
Zinc	'000 tons	...	...	33·4	20·1

* Production figures are incomplete.

6. The estimated requirements of important minerals by industries by 1955-56, are indicated below :—

Mineral Raw materials required annually by industries

		Present consumption	Estimated requirements in 1955-56
Coal	Million tons	10·0	14·0
Limestone	Million tons	5·3	8·9
Gypsum	'000 tons	97·0	870·0
Iron ore	'000 tons	2672·0	4000·0 (*a*)
Manganese Ore	'000 tens	70·0	100·0
Bauxite	'000 tons	26·0	60·0 (*b*)
Glass sand	'000 tons	108·0	184·0
Ilmenite	'000 tons	NIL	3·0
Monazite sands	'000 tons	NIL	1·5
Sulphur	'000 tons	42·5	82·0
Rock phosphate	'000 tons	35·0	108·0
Petroleum crude	'000 tons	NIL	1700·0 (*c*)
Pyrites	'000 tons	NIL	22·0

Excepting the requirements of sulphur, petroleum and copper and other non-ferrous metals, India has the basic mineral and power resources needed for the industrial expansion envisaged.

7. The power resources in India comprise coal, oil and hydro electricity. India's coal mining is centred mainly in Bihar and West Bengal. The total workable reserves of coal down to a depth of 1,000 ft. are estimated at 20,000 million tons, of which the good quality coal would amount to 5,000 million tons. The reserves of coking coal, however, are small amounting to only 2,000 million tons.

Very little petroleum is produced in India. Digboi, the only source at present yields about 60 million gallons annually which is about 7% of India's requirements. Indications of productive oil fields are also present in Tripura State, Patharia R.F. (Assam) and in the Kangra district (Punjab).

As against relatively meagre resources of coal and oil, the hydro-electric resources of India are considerable, estimates varying from about 30 million horse-power to 40 million.

(*a*) When the expansion scheme of the existing steel manufacturers is complete, the demand for iron ore is expected to go upto 4·4 million tons which is expected to rise further to 5·5 million tons when the proposed Government Steel Factory of 600,000 tons capacity materialises.

(*b*) When the expansion programme of Indian Aluminium Co. is implemented, the demand for bauxite is expected to increase to 100,000 to 110,000 tons per annum.

(*c*) When the second refinery comes into full production and with the implementation of the third refinery, the demand for petroleum crude would rise to 4·2 million tons per annum.

8. India possesses large quantities of high grade iron ore and may be classed as one of the countries which can reasonably expect a long continued development of heavy industry though, in proportion to the population, these reserves are lower than in the main ore regions of the world. Likewise there are large reserves of bauxite. India is also the world's main source of supply of mica, ilmenite and monazite.

9. It should be stated again that in most cases the reserves, though known to be large enough, are not known in sufficient detail, especially in regard to quality, for purposes of development. Moreover, the distribution is capricious in a territorial sense, some parts of the country being poor, others being comparatively rich.

MINERAL POLICY

10. Amongst natural resources, minerals form a special category as they are " wasting assets " ; once they are taken out of the ground and utilised, they are lost for ever. They should, therefore, be treated on a different footing from replenishable natural resources. Minerals figure in the export trade of India and contribute to the earning of foreign exchange. They are exported, however, largely in the raw state.

11. As minerals form the basis of modern industry in peace and in war, it is necessary to have a rational policy as regards their working and utilisation. The keynote of this policy should be conservation and economic working. The essentials of such a policy of "coordinated, orderly and economic development" of the mineral resources are indicated in the following paragraphs.

(*i*) *Exploration and development*—In regard to almost every mineral, there are no reliable data of reserves. To ensure the efficient working of the known mineral deposits or those which may be found in future, it is necessary that all steps should be taken to ensure that the extent and value of the resources are determined so that the production programme may be organised on an economic basis and proper provision made in planning schemes for working. Concrete proposals for this purpose are made at the end of the chapter.

(*ii*) *Proper conduct of mining operations*—Though a mining industry has been in existence in this country for about half a century, only a comparatively small number of mines are being worked in an efficient manner under proper technical guidance. Many units are too small in size or too poorly financed for such working. Lack of a conservation policy is also responsible for the present condition of the industry. There is large wastage, especially in minerals of marginal grades, as these are either abandoned in the mines or thrown away on the mine dumps. Ways and means must be devised for the mining and recovery of these low grade materials. Ores which it is not possible to work economically under normal conditions should be left in the mines so that they may be extracted at a later date without serious loss. The mine dumps all over the country have to be carefully examined and sampled so that their valuable mineral content may be recovered by methods of beneficiation now available. It should be a rule that selective mining of high grade minerals alone should not be undertaken and that all grades should be worked and, wherever possible, blended to produce marketable grades.

To bring about a general improvement in methods of mining as well as in the recovery of economically workable resources, mining interests will have to employ properly qualified technical personnel for conducting mining operations. The Indian Bureau of Mines should assist in this direction through its inspectorate whose function will be to inspect every mining operation and advise the owner on proper methods of development and also to ensure that the advice given is implemented. The Indian Bureau of Mines should also be responsible for the collection of detailed information on the nature of mining operations carried on, the mechanical equipment in use, and of development programmes proposed by each unit.

(*iii*) *Strategic considerations*—The last war showed that valuable time and effort were wasted in conducting emergency exploratory work to develop resources of strategic minerals uneconomic to work in peace time and about the occurrences of which little information was available. The war also showed how difficult it was for the Government to resist pressure to investigate every potential source of supply, however, small. It is therefore necessary that particular attention should be paid to strategic minerals such as sulphur, ores of tungsten, tin, vanadium, etc. and the necessary preliminary information should be obtained so that production can be organised when required with the minimum of delay.

(*iv*) *Leasing of mineral properties and regulation of mineral development*—The Mines and Minerals (Regulation and Development) Act, 1948 (Act LIII of 1948) gives powers of regulation to the Central Government. Under this Act, the Central Government's concurrence is necessary for the issue of licences and leases for atomic energy minerals and rare minerals such as those containing uranium, thorium, vanadium, beryllium, titanium, wolfram, columbium, etc., coal, gypsum, lead, zinc and copper ores. Two changes appear to be desirable in these rules in the national interests. In the first place, the Central Government's concurrence should be needed for issue of licences and leases of other important minerals, *viz.*, iron ore, manganese ore, chromite, bauxite, and mica as these are important in the country's economy. Secondly, in the grant of mineral leases regard should be had to the size of mining properties in order to prevent the holding of very large areas by single interests and, also on the other hand, to ensure that the areas covered are not too small. The Central Government should lay down rules regarding economic units for different classes of minerals with due advertence to local conditions.

(*v*) *Statistics of mineral industry*—At present monthly, quarterly or annual returns of mineral production and export are available, but no data on the economics of the mining industry. There is provision under Act LIII of 1948 for the collection of detailed statistics in regard to the mining industry. The Bureau of Mines should be empowered to collect statistics relating to the present status and requirements of the mining industry, so that they can be studied in relation to development and planning. Statistics in regard to the mineral markets in India and abroad and the trends in international mineral trade should also be collected.

(*vi*) *Mineral trade*—Some of the important minerals of India, *e.g.*, mica, manganese and chromite, are worked largely for export. It should be the policy as far as possible, to convert minerals into finished or at least semi-finished products for purposes of export.

(*vii*) *Low grade ores*—More preliminary information than is now available is necessary in regard to low grade ores which are not at present economic. A comprehensive assessment of all data available from the commercial standpoint, and further exploration and research into problems of mineral dressing and processing are needed so that new development can be encouraged if and when justified or detailed information about the conditions under which the working of low grade and marginal deposits would become economic can be made available for use at the appropriate time.

The Plan lays down a programme based on the above principles and arranged in order of priority.

Some Important Minerals

12. An assessment of the reserves, in the light of present and future requirements and an indication of the future programme of surveys and investigation to be conducted and the policy to be adopted in respect of the following minerals *viz.*, coal, iron ore, manganese ore, chromite, non-ferrous metals, bauxite, magnesite, mica, gypsum and sulphur, is given below.

Coal

13. *Distribution*—The main coal producing areas in India lie in the north-east in the States of Bihar and West Bengal which contribute nearly 82 % of the total output. The other producing areas lie in Madhya Pradesh, Orissa, Hyderabad and Assam. In addition, there are coal deposits of the tertiary age in several places in Assam, Kashmir, Bikaner, Cutch and Madras.

14. *Reserves*—In 1932, Sir Cyril Fox estimated the reserves of workable coal (in seams of 4 ft. and over, with an ash content not in excess of 20 % on a moisture free basis and occurring within 1,000 ft. of the surface) at 20,000 million tons. Of this, the good quality coal (averaging 16% ash on a moisture free basis and occurring within 2,000 ft. of the surface) would amount to about 5,000 million tons, the bulk of which—about 4,600 million tons,—is in the coalfields of Bihar and West Bengal. These estimates referred to Gondwana coals. In addition, the reserves of tertiary coal were estimated to be of the order of 2,500 million tons.

15. *Coking coal*—Committees appointed from time to time have stated that reserves of good quality coal are limited. The latest of these, the Committee on the Conservation of

Metallurgical Coal (1949) has, on the basis of a re-survey, estimated the reserves of coking coal to be of the order of 2,000 million tons distributed as follows:

	Workable reserves		Quantity extractable			
			With stowing		Without stowing	
	Sel. Grade	Grade I & II	Sel. Grade	Grade I & II	Sel. Grade	Grade I & II
Working areas . .	981·4	1017·3	751·3	824·1	385·0	508·7
Virgin areas . . .	329·6	444·6	263·7	355·3	164·8	222·2
TOTAL	1311·0	1461·9	1014·0	1179·4	549·8	730·9

Expressed in another way:

	Million tons		Beneficiated: million tons
Selected A . . .	500	Coking coals with 15 per cent ash or less.	500
Selected B . . .	750	Coking coal with 15—17 per cent ash or less.	600
Grade I & II . .	1500	Coking coal with over 17 per cent. ash but which on beneficiation will yield coal roughly to the extent of 2/3.	1000
TOTAL	2750	TOTAL	2100

The Committee adds:

"This is the *in situ* value. Probably we can expect a recovery with modern mining methods of 75%, say 1600 million tons. To this, we may blend one-fourth of weakly coking coal making the overall figure for coal available for coking 2,000 million tons. This figure, however, may well be halved unless precautions (notably compulsory stowing) are taken in mining and unless steps are taken to use blends containing weakly coking coals and to wash the inferior grade of coking coal."

While the reserves of coking coal have been estimated recently by a special survey, the data regarding reserves of other grades of coal are not based on detailed estimates worked out from reliable surveys. It is necessary, therefore, that detailed surveys of coalfields should be undertaken in conjunction with drilling and prospecting. This has been provided for in the Plan.

16. Though, speaking generally, the coal reserves may be considered fairly adequate for the plans of industrialisation of the country, the position in regard to coking and semi-coking coal is clearly unsatisfactory. The future policy should, therefore, be one of strict enforcement of the conservation measures recommended by the Committee of 1949.

17. *Production*—During the last three decades, coal production has nearly doubled and reached a record figure of over 34 million tons in 1951. Practically the whole of this (97 to 98%) comes from the Gondwana coalfields and 85% is contributed by the coalfields of the Damodar Valley. The production of coal in India since 1939 has been as follows:

	Million tons		Million tons
1939	27·79	1945	28·97
1940	29·38	1946	29·27
1941	29·46	1947	30·07
1942	29·43	1948	29·82
1943	25·51	1949	31·44
1944	26·12	1950	32·31
		1951	34·43

18. *Consumption*—The figures available indicate that for the year 1950 consumption was distributed as follows:

	Estimated consumption	Percentage of total production
	tons	
Railways	10,030,000	31·1
Iron and steel and brass foundries including coke ovens, engineering works and re-rolling mills.	4,406,000	13·6
Consumption at collieries and wastage	3,645,000	11·3
Brick and tile factories including lime, potteries, cement works and refractories.	3,037,000	9·4
Steam electric utilities	2,249,000	6·9
Cotton and woollen mills	1,701,000	5·3
States (minor consumers)	1,450,000	4·5
Exports	1,000,000	3·1
Jute Mills	577,000	3·2
Paper Mills	457,000	
Bunker	430,000	2·2
Steamer service	430,000	
Balance available for consumption in other industries	3,034,000	9·4
TOTAL PRODUCTION	32,307,000	100·0

The railways are the largest consumers, taking nearly 31% of the total production. Of this, about 40% is coking and semi-coking coal. The colliery consumption which includes consumption in boilers, power plants in the mine premises and domestic coke for the staff is of the order of 11 % of the total production. It is stated that owing to lack of control, the colliery labour take coal from wherever they can get it without regard for the quality and quantity taken. It would appear, therefore, that with proper control by the management, it should be possible to save coal and minimise waste.

Of the total production of metallurgical grade coal, the railways consume about 40%, the iron and steel industry about 21%, about 13% is used for bunker and export and the balance is consumed by miscellaneous industries. The use of metallurgical coking coal for purposes other than for production of iron and steel and coking is unnecessary and the quantity used for these purposes should be replaced by coal of other quality. The Railways are already taking steps to reduce the use of metallurgical coking coal as speedily as possible. The switchover from metallurgical to non-metallurgical coal will, however, have to be effected without dislocating the industry. The Metallurgical Coal Committee. (1949) considered that it should be possible to reduce output without serious dislocation to the industry in stages in a five year period reducing the consumption every year by about 10% of the previous year's figure and also by planning an increased production of steel during this period.

The 1949 Committee estimated that the consumption of coking coal in iron and steel-making (and in the coke ovens) would rise from 3·7 million tons in 1949 to 8 million tons when the expansion programme of the steel companies and the setting up of two proposed steel plants were completed. This estimate of 8 million tons is now found to be optimistic. The expansion of the iron and steel industry envisaged in the plan and the proposed new pig iron plant will need an additional 1·8 million tons of coking coal by 1957-58, *i.e.* a total of 5·5 million tons leaving a surplus of this grade of coal not needed for essential purposes.

19. With these considerations in view and having regard to the need for conserving coking coal, the following programme was recommended in 1950 by the Planning Commission:—

(*i*) Production of metallurgical coking coal may be maintained at the present level but under no circumstances should new fields be developed. The closing of mines producing coking coal is recommended only in cases where they can be re-opened without large capital outlay.

(*ii*) Stowing, blending and washing should be enforced by law. It is believed that enforcement of stowing will lead to reduction in output of coking coal.

(*iii*) Selective mining should be stopped effectively.

(*iv*) The replacement programme, *i.e.*, for replacement of coking by other coals, should be taken up in two stages. As an initial step, the Selected 'A' & 'B' coking coal used in the railways and for other non-essential purposes should be replaced by non-metallurgical coal. When this programme has been completed, the replacement of the grades I and II coking and semi-coking coal should be taken up.

A programme for increased production of non-coking coal to replace selected 'A' & 'B' grade coal used for non-essential purposes will have to be drawn up by the Coal Board.

(*v*) So long as coking coal produced in the country is in excess of the quantities needed for the iron and steel industry and coking, such excess production may be exported to earn essential foreign exchange under special agreements negotiated with other countries.

In other words, the replacement programme for each year will be based on (*a*) the exports expected during the year, and (*b*) the demand for coking coal for essential purposes.

The working conditions of individual metallurgical coal producing collieries have to be examined technically for taking steps to conserve such coal.

DEVELOPMENT PROGRAMME

20. (*i*) *Survey*—Of the total of about 100 coalfields in India, only a few have been investigated to a depth of 1,000 to 2,000 ft. Though working collieries are found widely spread over all the coalfields the full extent of the reserves of these fields are not known. It is therefore, necessary to have all the fields geologically mapped and the resources estimated by the Geological Survey of India in collaboration with the Bureau of Mines and provision has been made in the Plan in this respect. It is also necessary that a comprehensive and detailed survey should be undertaken of working collieries in a manner similar to what was done in assessing the resources of coking coal in connection with the enquiry of the Metallurgical Coal Committee. Such a survey will provide reliable estimates of the reserves available in working collieries and virgin areas. A physical and chemical survey of the nature and quality of coal seams in the various coal fields should also be undertaken.

The Geological Survey of India and the Indian Bureau of Mines should undertake detailed mapping and investigation of the following fields:

(*a*) Korba and Rewa
(*b*) Talcher
(*c*) Kanhan Valley
(*d*) Karanpura
(*e*) Wardha and Godavari Valley

and collect full data relating to the sand resources of the Damodar, Barakar and Ajay rivers for purposes of stowing and investigate resources of other suitable stowing materials in and around the coalfields.

(*ii*) *Classification of coal*—The Coal Grading Board set up on the recommendations of the Indian Coal Committee (1925) drew up a classification of Indian coals mainly for purposes of export. The Coal Commissioner in 1944 drew up a revised classification applicable to all coals. A revised scientific classification should now be introduced based upon calorific value, ash content, moisture and coking property. The classification should aim mainly at fixing the types and grades suited for various purposes and thus depend upon uses to which the coal is to be put. This question should be referred to a technical committee of experts familiar with Indian coals and with scientific classification in other countries. So far, no international classification of coal is available, but the International Standards Organisation has constituted a Technical Committee to co-ordinate the various national standards and to evolve suitable forms of classification to facilitate the international exchange of information and a comparison on discussions of data relating to coal and its utilisation. Such a use classification will assist in controlling distribution and allocation of coal for different industries and also make it possible to buy and sell in accordance with specifications.

(*iii*) *Appraisal of consumption*—Though it is not possible to indicate precisely what the consumption will be by the end of the period of the Plan, a broad indication may be given of the order of increase in consumption by 1955-56. The additional demand is expected to be of the order of about 6 million tons—4 million tons for the industrial development envisaged, 1 million tons for the railways and 1 million tons for additional thermal power generation and other purposes. Judging by recent trends in production, this additional demand can be met by the mining industry.

(*iv*) *Reorganisation of transport*—The Railways at present transport more than 90% of the coal produced in the country and there are no navigable waterways to carry coal cheaply to other parts of the country. Some coal is shipped from Calcutta by coastal steamers to coastal areas. But it has been found that the sea freights are substantially higher than railway freight. The use of coal by industries is now largely a matter of easy availability coupled with price. But beyond a short distance from the coalfield the pits mouth price has no influence on the demand as the freights equal or exceed the cost of coal and it becomes advantageous to the consumers to use the best grade he can procure. If the use of coal is to be rationalised, it would be necessary to supply suitable coals from the nearest coalfields. In recommending a programme for the replacement of coking coal used for non-essential purposes by non-coking coal, the Commission had two objects in view:—

(*i*) stepping up production of non-coking coal from existing collieries in Raniganj, Ramgarh and Karanpura coalfields ; and

(*ii*) stepping up production from outlying coalfields like those in Korea, Rewa, Hyderabad and Assam and developing the Korba coalfield in Madhya Pradesh with a view to rationalise production and distribution. The transport facilities required to develop these fields have been worked out and are estimated to amount to about Rs. 850 lakhs.

The Working Party for the Coal Industry has made similar recommendations to ease the difficult supply position in South India, Western India, Cutch and North Bihar.

21. *South Arcot lignite*—Preliminary investigations indicate the existence of fairly large reserves of lignite over an area of at least 23 sq. miles. To determine the workability of the deposits, a programme of exploratory quarrying has been drawn up and this will be taken up shortly. The large-stale development of the deposits will have to await the results of the exploratory operations.

22. *Railway collieries*—A programme of development of some of the railway collieries has been drawn up. The programme includes mechanisation, sand stowing and opening up of new seams and new areas.

23. *Labour*—The coal mining industry employed in 1951 about 340,000 workers, an increase of 58% over that in 1941 (214,244). During the same period production registered an increase of 32 % (from 25·89 million tons to 34 million tons). There has thus been a decline in the output per man year from about 127 tons in 1941 to a little over 100 tons in

1951. (The figures quoted above refer only to coalfields coming under the Indian Mines Act). Coal mining in India is mostly a manual operation and very little machinery is used. Output per man shift, which may be taken as an index of the productivity of the worker, is low in India. The suggestions made in this respect by the Working Party for the Coal Industry, *viz.*, mechanisation, proper lay out and planning of future mines, introduction of piece-rate system of payment and linking of bonus to the unit of production (instead of to attendance as at present) are being examined by Government.

24. *Research*—Except isolated studies by individual producers or consumers no organised research on problems connected with coal mining or utilisation has been undertaken in India so far. The Fuel Research Institute should undertake research on carbonisation and production of coke, design of coke ovens, washing and blending of coal and desulphurisation of coal. The programme of investigations is set out in detail in paragraph 69 (i).

As laboratory research has to be supplemented by pilot and larger scale experiments for the results of research to be of an industrial value, the Fuel Research Institute should be adequately financed for these purposes. Provision has been made in the Plan for this.

25. *Control and development of the coal industry*—The Planning Commission in a special paper prepared for the Government invited attention to:

(*i*) the extreme urgency of conservation measures ; and

(*ii*) the need for setting up a machinery which will bring about the adoption of a co-ordinated policy in regard to all questions relating to coal.

After a review of the whole position, the Planning Commission made the following recommendations:—

(*i*) legislation for enforcement of stowing for conservation in addition to safety, washing and blending should be assigned the highest priority in the interest of conservation of national resources of high grade coking coal ;

(*ii*) a consolidated cess should be levied in place of the existing separate cesses, the yield of which should be allotted for safety and conservation measures, labour welfare, research and other purposes, according to requirements ;

(*iii*) a machinery—a Coal Board—should be set up which will examine all questions relating to coal from a comprehensive point of view and make recommendations to the ministries concerned and thus assist in the evolution and execution of a co-ordinated policy.

These recommendations involve a single legislative measure for coal which would provide for the purposes indicated above.

It also suggested that if practical convenience required it, action might be taken in stages ; firstly, legislation for enforcing conservation measures ; secondly, setting up a Coal Board ; and thirdly, legislation for the consolidation of the cesses.

20. *Action taken by Government*—Taking into consideration the recommendations of the Planning Commission, the Government of India promulgated the Coal Mines (Conservation and Safety) Ordinance, 1952, which has been subsequently passed by Parliament and issued as the Coal Mines (Conservation and Safety) Act, 1952. Under the Act, the Central Government will have the following powers:

(*i*) to adopt measures for maintaining safety of coal mines or conservation of coal ;

(*ii*) to delegate powers to a Coal Board set up under section 4 for dealing with problems of the coal industry ;

(*iii*) to levy and collect excise duty on all coal and coke, raised or manufactured and despatched and an additional excise duty on all coking coal raised and despatched ;

(*iv*) to impose and collect import duty on all coal imported ;

(*v*) to constitute Advisory Committees to advise the Government in any matter connected with the administration of the Act ;

(*vi*) to frame rules for safety in coal mines, conservation of coal, levy and collection of excise duty, imposition and collection of import duty, constitution of the Coal Board and its functions, administration of the Coal Mines (Safety and Conservation) Funds, constitute Advisory Committees and committees of inquiry to inquire into references arising from out of an order passed under sub-section (3) of section 13 of the Act ;

(*vii*) to provide penalties for contravention of the provisions of this Act.

The Central Government will in each year pay to the Board a sum not exceeding the excise duty collected (the amount to be determined in such manner as may be prescribed). This amount will be credited to a fund called the Coal Mines (Safety and Conservation) Fund, which will be operated by the Board to meet among other things :

(*a*) expenditure on the administration of the Board ;

(*b*) grant of stowing materials or other assistance for stowing operations ;

(*c*) prosecution of research work connected with safety in coalmines or conservation and utilisation of coal ; and

(*d*) grants to State Governments or research organisations etc., of money in aid of any scheme approved by the Central Government.

The Act repeals the Coal Mines Safety (Stowing) Act, 1939, and will take over the amount lying to the credit of the Coal Mines (Stowing) Fund as on the 8th January, 1952 and transfer it to the Coal Mines (Safety and Conservation) Fund.

In pursuance of section 4 of the Act, the Central Government have established a Coal Board consisting of a Chairman and three members and have prescribed the rates of excise duty leviable on coal and coke and the additional excise duty leviable on hard coke.

IRON ORE

27. *Distribution*—India's resources of iron ore are of large dimensions. Ores of good quality occur in Singhbhum district of Bihar ; Bonai and Mayurbhanj in Orissa ; Chanda, Drug and Bastar districts of Madhya Pradesh ; Salem, Tiruchirapalli and Bellary districts of Madras ; Ratnagiri district of Bombay and the adjoining area of Goa ; and in the Shimoga, Kadur and other districts of Mysore. There are smaller deposits in Almora district of the U.P. ; PEPSU; Kurnul and Cudappah districts of Madras and the coalfields of West Bengal, while deposits of lower grade are scattered over different parts of the peninsula.

28. *Reserves*—The ores in most cases contain a high percentage of metallic iron (over 60 %) and are generally low in phosphorous and sulphur. Reserves of good quality iron ore (containing over 60% iron) are estimated to be over 10,000 million tons, the bulk of which is concentrated in Bihar and Orissa. Except the Bihar and Orissa occurrences, the deposits are not situated close to supplies of coking coal.

The ore deposits particularly those of Bihar and Orissa have been investigated in a general way by the Geological Survey of India, but except in the case of a few of them—those worked by the steel companies—the investigations have not been sufficiently detailed to prove their quality and quantity. The present estimates are only in the nature of a broad indication of the magnitude of the reserves. A proper assessment of the quality and quantity of these deposits is necessary and it is suggested that the deposits in the following areas may be investigated in detail :

(*a*) Bonai and Keonjhar (Orissa).
(*b*) Drug and Chanda (Madhya Pradesh).
(*c*) Bastar (Madhya Pradesh).
(*d*) Ratnagiri (Bombay).
(*e*) Sandur (Madras).

29. *Production, consumption and demand*—The average annual production of iron ore during the past few years has been varying between two to three million tons, the chief producing regions being in the iron ore belt of Bihar and Orissa, and Mysore. Mysore's share in production has been varying between 40,000 and 60,000 tons and practically all the rest has come from Bihar and Orissa. These figures may be taken as an index of the present capacity of the two regions to utilise iron ore for the production of pig iron. Most of the ore is utilised by the three iron and steel plants at Tatanagar, Asansol (Hirapur) and Bhadravati, while a small quantity has been exported.

Production of Iron Ore, Pig Iron and Steel

		Iron ore	Pig iron	Steel
		(Figures in thousands tons)		
1929-33	Average	1779	1119	443
1934-38	„	2490	1495	667
1939-43	„	3068	1868	968
1944-48	„	2364	1450	964
1949		2809	1589	1012
1950		2965	1646	970
1951		3657	1802	1070

The average annual production of pig iron in India is of the order of 1½ to 2 million tons, and of steel about 1 million tons. Production does not meet the demand in full and the gap between production and demand is filled to some extent by imports from abroad. Both iron and steel have been in short supply in the war and post-war years :

		Imports of iron and steel (Value in Rs. lakhs)			
		Iron and Steel	Cutlery	Hardware	Machinery
1939-40 to 1941-42	Average	579·6	21·5	217·4	1287·5
1942-43 to 1944-45	"	238·4	14·0	107·4	1187·9
1945-46 to 1947-48	"	577·8	80·7	408·7	3573·1
1948-49*		1146·7	42·9	595·7	7674·3
1949-50*		1512·5	52·5	613·9	10919·4
1950-51*		1324·9	28·1	456·5	8282·6

The estimated demand (1955-56) for pig iron and steel is shown in the following table together with the present capacity and the schedule of expansion contemplated.

(Figures in thousand tons)

Present capacity	Estimated demand 1955-56	Additional capacity required	Additional capacity under consideration	Difference between columns 3 and 4
Pig iron 1,878	2,735	857	685	172
Steel 1,050	2,500	1,450	320	1,130

The expansion of production of pig iron and steel envisaged above would involve expansion in the production of raw materials as shown below :

	Present requirements	Estimated requirements
	(Figures in thousand tons)	
Iron ore	2,675	4000
Coke and Coal	2,365	3,800
Manganese ore	70	100
Limestone	572	995

The increased production of the abovementioned raw materials would require provision of necessary transport facilities for assembling these raw materials and for the movement of manufactured products.

*Figures inclusive of imports on Government Account.

30. *Exports*—There has been a small export trade in iron ore, as indicated below:

Year	Tons
1940-41	13,300
1941-42 to 1944-45	NIL
1945-46	810
1946-47	20
1947-48	..
1948-49	..
1949-50	4,300
1950-51	84,513
1951-52	280,102

Export of iron ore has been fluctuating. In recent years, the export demand for iron ore has increased but limitations of transport have restricted the extent to which this demand can be met. The long-term policy is to expand pig iron production to meet internal demand as well as, if possible, for the export market, instead of permitting exports of ore.

MANGANESE ORE

31. Manganese is an important material in industry as the metallurgy of iron and steel is dependent upon it for smelting processes. India has fairly large deposits of manganese ore and is one of the chief producers of the mineral. Other important producers are U.S.S.R., Brazil, South Africa and the Gold Coast. Except U.S.S.R., none of the other great industrial countries possess manganese deposits of importance and deposits in India therefore assume special importance.

32. *Distribution of deposits*—The chief manganese ore deposits are concentrated in a few regions, *viz.*, the districts of Chhindwara, Nagpur, Balaghat and Bhandara in Madhya Pradesh ; Jhabua in Madhya Bharat ; Bellary (Sandur) and Visakhapatnam districts in Madras, Shimoga in Mysore ; Panchmahals and certain districts of southern Bombay and a few scattered areas in Bihar and Orissa. Of these, the largest and the richest are those of Madhya Pradesh yielding ores which are generally high in manganese content.

33. *Reserves*—The ore bearing region in Madhya Pradesh extends over a length of more than 100 miles from Bhandara through Balaghat and Nagpur to Chhindwara district. The ore bodies are often of large size, but their extension in depth is not known. This lack of information is due to the comparatively small amount of underground mining that has been carried out and the almost complete a lack of drilling to determine the depth. The ores are hard and fine grained and usually high in manganese content, which is over 49 % in most of the ores from Bhandara and Balaghat districts. The phosphorous and iron contents are variable and the latter is usually high—rather too high for the ore to be used straight in blast furnaces for high grade ferro-manganese production. The deposits in Sandur, Mysore and southern Bombay are of low grade and of comparatively small magnitude. The Singhbhum deposits are of small size and irregular nature. Numerous small sized deposits occur in Gangpur, Keonjhar, Bonai, Kalahandi and Koraput areas in Orissa. The quality varies from high to low grade but they possess an advantage in their proximity to the iron and steel centres. Besides, these regions possess a certain amount of low phosphorous, low iron manganese ore and a certain quantity of ore rich in peroxide for use for chemical purposes.

There are no reliable estimates of reserves available for any of the deposits. One of the deposits in Madhya Pradesh worked by the Central Provinces Manganese Ore Co. has been proved to contain about 5 million tons of high grade ore. The deposits in Madhya Pradesh were estimated a few years ago to contain about 10 million tons of high grade ore and about 3 million tons of lower grades. On the whole, it may be assumed that the reserves of high grade ore are of the order of 15 to 20 million tons and that of lower grades will amount to about three times the above quantity, but these figures are only approximate.

34. *Production*—Mining of manganese began in 1891 and developed rapidly during the early years of the present century. Annual production for the last 40 years has averaged about 600,000 tons and had exceeded the million ton mark in three years. Except for a small fraction of the total production consumed by the Tata Iron and Steel Co., almost the entire production is exported in the raw form. So far, about 30 million tons of ore—much of it high grade—have been exported. Figures of production and export of manganese during the last decade are given in the statement below :

Year		Production (tons)	Domestic consumption (tons)	Exports (tons)
1939-43	average	671,471	74,043	599,616
1944-48	average	362,678	56,495	353,554
1949		645,825	79,264	613,907
1950		882,929	69,325	808,221
1951		1,283,929	88,867	952,000

35. *Consumption*—Domestic consumption is mostly confined to the steel industry which uses ore for production of ferro-manganese required for steel plants. The table above shows the consumption of manganese ore by the iron and steel industry. A certain amount of manganese ore is consumed in the glass industry and also in the manufacture of dry cells and in the chemical industry. Consumption of manganese ore in industries other than steel are not large.

Domestic consumption of manganese ore will go up during the next few years as a result of expansion envisaged in respect of iron and steel production and other industries. It is estimated that domestic requirements will go upto 100,000 tons by 1957-58. There would be no difficulty in meeting the expanded demand.

36. *Export policy*—As stated above, India occupies a position of importance as a world supplier of this mineral. Taking into account the absence of definite information regarding the extent of reserves and in order to meet the requirements of an expanding iron and steel industry, a policy of strict conservation of reserves is called for. Export control was brought into force late in 1948 and ceiling limits were placed for both high and low grade varieties. Later, for special reasons, Government decided on a policy of export of high grade ores to the extent of 1 million tons per annum for a temporary period. This policy will be re-examined if it is found by detailed geological investigations that the reserves of high grade ore prove to be smaller than at present estimated.

Recommendations

37. (*i*) *Survey and appraisal of resources*—As already pointed out, there are no reliable estimates available of India's resources of manganese ore. It is therefore, necessary to institute an immediate investigation of all the deposits indicated below:

(*a*) areas in Madhya Pradesh.
(*b*) Jamda, Rayagada and Kalahandi (Orissa).
(*c*) Panch Mahals (Bombay).
(*d*) Ratnagiri, Dharwar and North Kanara (Bombay).
(*e*) Mysore.
(*f*) Visakhapatnam and Sandur (Madras).

(*ii*) *Manufacture of ferro-manganese*—The aim should be to convert the ore into ferro-manganese and manganese chemicals for purposes of export instead of exporting it in the raw condition. At present only a small percentage of the total production of manganese ore is converted into ferro-manganese for domestic consumption in the steel industry. The Tata Iron and Steel Co. produce ferro-manganese in the blast furnace for their own consumption. The average production of ferro-manganese during the last ten years is about 13,000 tons a year. Plans for setting up further ferro-manganese plants are under consideration.

(*iii*) *Beneficiation*—It is believed that India has abundant resources probably of the order of 70 to 80 million tons of low grade ore, *i.e.* those containing less than 42% manganese. There is only a restricted market for such ores. Investigations in regard to beneficiation of such ores should be undertaken by the Bureau of Mines in collaboration with the National Metallurgical Laboratory. For this, provision has been made in the Plan. Investigation should also be undertaken for the recovery of manganese ore in the dumps and effective measures undertaken to control and if possible, eliminate wastage of ore in mining.

CHROMITE

38. *Distribution and reserves*—Chromite is an important strategic mineral of which India has moderate supplies. The chief chromite deposits in India are situated in the Singhbhum district (including Seraikela) of Bihar ; the Mysore and Hassan districts of the Mysore State ; the Ratnagiri and Sawantawadi areas of Bombay; the Krishna and Salem districts of Madras and the Keonjhar district of Orissa. There are also deposits near Dras in Ladakh, Kashmir State, but these are practically inaccessible. Those in Manipur (Assam) and the Andaman Islands will have to be investigated further before their economic importance can be ascertained.

No reliable estimates of reserves are available but the following figures may be given as general indications:

Mysore	135,000 tons.
Bombay	67,000 tons.
Orissa	200,000 tons (20′ depth).
Salem (Madras)	200,000 tons (20′ depth).
Krishna	Not known.

39. *Production and export*—The following table gives figures of production and export of chrome ore from India :

		Production tons*	Export tons*
1939-43	average	47,524	41,901
1944-48	average	34,552	17,426
1949		19,416	6,382
1950		16,729	3,864
1951		15,802	8,838

It will be noticed that a major part of the production is being exported, practically all of it being high grade ore containing 46 % and above of chromic oxide. Domestic consumption is mostly confined to the manufacture of refractory bricks (chromite bricks) while smaller quantities are used for the manufacture of chrome chemicals. There has been no attempt to manufacture ferro-chrome or chromium alloys except on a very small scale by Tatas.

Export of chromite which was unrestricted till 1948 was brought under control and a ceiling of 10,000 tons was prescribed. In view of the absence of definite information regarding the extent of the reserves, export of high grade ore has been totally banned since June 1951 and low grade ores are being licensed upto a maximum of 10,000 tons a year. Even this policy should be reviewed as soon as more definite information can be gathered about the reserves.

40. *Recommendations*—A programme of detailed mapping (and if necessary, drilling) should be undertaken in the following chromite bearing areas :

(*a*) Singhbhum (Bihar).
(*b*) Baula Hills (Orissa).
(*c*) Ratnagiri (Bombay).
(*d*) Krishna (Madras).

As reserves of high grade ore available in the country are limited, the Bureau of Mines in conjunction with the National Metallurgical Laboratory should undertake research on the beneficiation of low grade chrome ores from various parts of India.

Non-Ferrous Metals

41. India's reserves of non-ferrous metals are inadequate with poor resources of copper, lead and zinc and practically no deposit of tin. The following table gives the annual production and consumption in 1950.

	Production tons	Consumption tons	Percentage of deficiency	Value of imports Rs. (lakhs)
Copper	6,614	48,391	84%	900
Zinc	Nil	33,400	100%	523
Lead	629	15,624	96%	205

The cost of imports of these three metals amounted in 1950 to Rs. 16 crores.

*The figures include output from Baluchistan up to 1947.

COPPER

42. *Distribution*—The most important deposits of copper are found in the Singhbhum copper belt (Singhbhum district, Bihar) about 80 miles in length. Other deposits are in Bhotang near Rangpo (Sikkim), Khetri in Jaipur and Daribo in Alwar (Rajasthan) ; Baragunda in Hazaribagh and Barukhi in the Santhal Parganas (Bihar); Belligudda in Chitaldrug (Mysore) and in Almora and Tehri-Garhwal (U.P.). There are also smaller deposits like those of Gani in Kurnool, Vinukonda in Guntur and Garimenpenta in Nellore (Madras); Niwar and Sleemanbad in Jubbulpore and Karamsara in Balaghat (Madhya Pradesh) ; in Kangra in the Punjab and in Jammu and Kashmir. No estimates are available of the reserves of copper ore in the deposits mentioned above except in the case of Singhbhum.

There is only one copper producing agency in India, *viz.*, The Indian Copper Corporation Ltd., with its mines at Mosaboni in the Singhbhum copper belt of Bihar. Chalcopyrite is the chief copper ore worked here.

The following table gives the production of copper ore and copper metal from the Singhbhum deposits during the last ten years :

Year	Copper ore Quantity (Tons)	Value Rs. (lakhs)	Refined copper (Tons)
1939-43 average	373,244	59·9	6,236
1944-48 average	330,674	70·1	6,066
1949	329,303	110·5	6,390
1950	360,308	120·2	6,614
1951	369,057	194·0	7,083

LEAD AND ZINC

43. Lead and zinc deposits occur sporadically in several places of which the more promising are those at Zawar in Mewar and Chauthka-Barwara in Jaipur district. Another lead-zinc deposit is in the Riasi district of Kashmir. Of these, the deposits at Zawar were opened up during the last war by the Geological Survey of India and have since been leased to the Metal Corporation of India who began operations in 1945. The total production of lead ore concentrates till 1950 amounted to nearly 6,500 tons. There has also been a small but intermittent production from the deposits in Jaipur, *viz.*, 42 tons from 1945 to 1948 (inclusive). The Metal Corporation of India has recently been granted a loan by the Industrial Finance Corporation to develop the deposits and to make arrangements for stepping up production of lead.

No arrangements have yet been made to smelt and recover the zinc. A committee has recently been set up to examine the question of setting up a zinc spelter industry in the country. The largest use of zinc in the country is in the manufacture of galvanized iron sheets. As the yield from Zawar may be comparatively small, even when the deposits are fully developed, it would be desirable to investigate the possibility of replacing zinc and developing an alternative coating for steel sheets.

44. *Recommendations*—As the present production of copper barely amounts to 12 to 15% of India's consumption, detailed geological and prospecting operations should be undertaken in the regions indicated below:

(*a*) The Singhbhum copper belt (Bihar).
(*b*) Khetri in Jaipur (Rajasthan).
(*c*) Daribo (Alwar, Rajasthan).
(*d*) Hazaribagh (Bihar).
(*e*) Gani (Madras).
(*f*) Almora and Tehri-Garwal (U.P.).

Several small occurrences of lead-zinc ores have been noted in several places scattered over the country, and the possibility of some of them containing workable quantities should be investigated. Attention should also be paid to the reported occurrence of tin in the Hazaribagh district of Bihar.

BAUXITE

45. *Distribution and reserve*—Bauxite the chief ore of aluminium is fairly widely distributed in India. The most important occurrences are found in the States of Bombay, Madhya Bharat, Madhya Pradesh, and Bihar. Some are also found in Orissa, Madras and Kashmir.

No reliable estimates of the reserves are available, though Sir Cyril Fox of the Geological Survey of India considered that the total reserves would be of the order of 250 million tons of all grades. Of this, high grade reserves would probably amount to 35 million tons distributed as follows:—

Madhya Pradesh	15·10 million tons
Eastern States (Orissa)	8·58 ,, ,,
Bihar	5·23 ,, ,,
Bombay	3·23 ,, ,,
Madras	2·00 ,, ,,
Kashmir	1·00 ,, ,,
Bhopal	0·25 ,, ,,

46. *Production and consumption*—The following table shows the production of bauxite:—

Year	Quantity tons
1939-43 average	14,476
1944-48 average	15,035
1949	42,541
1950	64,399
1951	67,047

In the last two years, the domestic aluminium industry has been consuming annually about 20,000 tons of bauxite which is less than 50% of the country's production. The greater part of the production is being used in the manufacture of alum, high alumina cement, refractories and in the refining of petroleum. Metallic aluminium was first produced in India in 1943 but from imported alumina. Since then two companies have been producing aluminium and the alumina required for its manufacture is now produced from Indian bauxite. The two companies used in 1951 a total of about 19,000 tons for this purpose. The output of metallic aluminium since 1943 is given below:

Year	Tons	Year	Tons
1943	1,272	1948	3,368
1944	1,723	1949	3,491
1945	2,254	1950	3,594
1946	3,248	1951	3,849
1947	3,223		

The production meets only a part of the country's demand as will be seen from the fact that during the last three years, imports have averaged 10,000 tons valued at Rs. 2½ crores a year. The consumption indicated by these figures is probably an underestimate of the country's requirements. It is estimated that the demand in the next few years would be of the order of 15,000 to 20,000 tons per annum. Both the manufacturing units have schemes for expansion of their capacity by 3,000 tons and there are proposals for an additional reduction plant with a capacity of 10,000 tons to be located in Orissa. These expansions, when they take place, will mean a demand for 45,000 tons of bauxite by 1955-56; this can be easily met by the industry.

47. *Recommendations*—(*i*) The deposits should be carefully investigated so that reliable estimates of reserves can be made, and the characteristics of the ore from each large deposit determined.

(*ii*) The use of bauxite for the manufacture of refractories and abrasives should be examined in the laboratory by the Bureau of Mines in collaboration with the Central Glass and Ceramic Research Institute.

MAGNESITE

48. Large deposits of magnesite, which is used in the manufacture of magnesium salts, metallic magnesium and refractory bricks are known to occur in a number of places in Salem (Madras) ; Hassan, Mysore (Mysore) ; Almora (U.P.) ; Coorg ; Idar (Bombay) ; Dungarpur (Rajasthan) ; and Singhbhum (Bihar). Of these, the chief producing areas are Salem, Hassan and Mysore.

The deposits in the Salem district have been estimated to contain over 90 million tons within a depth of 100 ft. from the surface. The Almora deposits are supposed to contain a minimum of 20 million tons. With regard to other deposits no information is available.

The output and export of magnesite during the last few years from Salem and Mysore are given in the following table :

Year	Output		Export	
	Quantity tons	Value Rs.	Quantity tons	Value Rs.
1939-43 average	42,885	3,26,958	11,435	9,49,913
1944-48 average	42,983	5,85,330	10,549	9,67,150
1949	90,564	15,53,456	37,099	24,84,012
1950	52,859	10,87,349	16,465	24,37,114
1951	117,071	17,78,134	46,409	43,94,533

Only a part of the output is used in the manufacture of refractory bricks for steel works and a considerable quantity is exported. There is scope for using magnesite in the manufacture of oxychloride cement and as a raw material for the manufacture of metallic magnesium. Research should also be undertaken with a view to utilizing the low grade magnesite and chromite rock for refractories instead of high grade magnesite now used for the purpose.

MICA

49. Mica is a mineral of strategic importance because of its perfect cleavage, flexibility, infusibility, high heat and electrical insulation and high di-electric strength, a combination of qualities not possessed by any other natural material. The chief demand for mica comes from the electrical industry, while in powder form after grinding to a suitable size, it is also used as a 'filler' in various industries.

India is one of the important sources of sheet (block) mica producing between 70 and 80% of the total block mica output of the world. The splitting of mica is done by hand and has so far defied attempts at mechanisation on a commercial scale and India holds a dominant position in the "splittings" trade. The mica industry of the country depends largely on the export market, the domestic consumption being small.

Commercially, two varieties of mica are important—muscovite or potash mica and phlogopite or magnesian mica. Most of the deposits in India produce the muscovite variety ; phlogopite is available in comparatively small quantities from a few places mainly in Travancore. Both the varieties are used for electrical insulation, the best qualities being used for high tension electrical work.

50. *Distribution*—The principal mica deposits are concentrated in three regions, *viz.*, Bihar, Rajasthan (including Ajmer-Merwara) and Madras, while in recent years, its occurrence has been reported from other parts of India also. In Bihar, which is the largest producer, they are found in the districts of Hazaribagh, Gaya and Monghyr, forming what is called the " Bihar mica belt". This region is about 60 to 80 miles long and about 12 to 16 miles wide and produces the well-known " ruby" mica which is in great demand all over the world. Bihar produces about 60% of the Indian output. Sheet mica from this region is noted for its large size and flatness.

The deposits in Rajasthan occur in Ajmer-Merwara, Udaipur, Kishangarh, Jaipur and Tonk. Most of these deposits are still in an early stage of development and are likely to become more important when intensive prospecting and mining are undertaken. At present, Rajasthan is responsible for about 25% of the Indian production. Most of the production from Rajasthan is sent to Bihar to be split and marketed.

Mica deposits are found in Madras at several places, the most important being those of the Nellore district where there is a " mica belt" about 40 miles long and 5 to 10 miles wide. The greater portion of Madras production is of the variety known as " green" mica. Smaller deposits occur in Visakhapatnam, West Godavari, Salem, Nilgiri, Madura and Coimbatore districts and in the States of Travancore and Mysore.

On account of the irregular disposition of the mineral in the rock, it is not possible to indicate the size of the reserves of mica in any of the above mentioned regions. Most of the workings are either open cast quarries or shallow mines and the deepest mica mines in Bihar and Madras are stated to be only about 600 ft. deep. Judging by present indications, it can be safely stated that there are untapped reserves which will run for many decades at the present rate of production.

51. *Production and export*—Statistics of mica production are not quite satisfactory and export figures are always in excess of production figures. The reasons for this wide discrepancy between the production and export figures may be explained as due to :

(1) export trade in stolen mica which does not appear in the returns of production ;

(2) export of mica recovered from dumps, scraps and waste which are not reported ; and

(3) sale of crude mica by small producers direct to dealers who do not submit any returns.

Since the bulk of the production is exported, export figures may be taken as a more reliable index of the output.

The annual value of the mica exports during the last decade was of the order of Rs. 1½ to 3 crores. This has gone up during the last two years as a result of large purchases by the Government of the U.S.A. for stockpiling purposes. The quantity and value of mica exported from India are given below:

		Blocks	Splittings	Total (including waste and scrap)
Average of 1940-41 to 1946-47	'000 Cwts	26·9	103·9	153·8
	Rs. (lakhs)	110·0	149·9	261·0
1947-48	'000 Cwts	14·9	174·8	255·2
	Rs. (lakhs)	128·0	433·5	565·1
1948-49	'000 Cwts	12·1	200·1	340·2
	Rs. (lakhs)	83·6	502·8	593·7
1949-50	'000 Cwts	8·8	207·5	297·7
	Rs. (lakhs)	95·2	584·0	684·5
1950-51	'000 Cwts	20·6	238·6	383·4
	Rs. (lakhs)	177·4	773·7	958·5

It will be seen from the above table that splittings form the larger part of the export and have during the last two years contributed more than 80% of the value of exports. This increase in quantity and more especially in the value of exports has been occasioned by the stockpiling by the U. S. A. and cannot be taken as an index of the normal demand.

52. *Mining*—Mica mining is mostly a small scale operation and as indicated earlier, most of the workings are open cast quarries or shallow mines. Of a total of about 600 mica mining lessees, the majority are people with limited financial resources, who have to sell their mica to middlemen immediately after it is mined in order to obtain money to continue their mining operations. There has, therefore, been no incentive to adopt systematic mining operation or to employ qualified managers and this results in considerable wastage. Steps are being taken by the Ministry of Labour to make compulsory the appointment of qualified managers in mica mines also.

53. *Grading and classification*—Mica is used in industry practically in its natural form except for trimming, splitting and cutting to shape. Mica splittings and films, are however made into sheets or applied to cloth with a suitable binder and pressed into suitable shapes, the former being known as micanite. The mica thus prepared is graded according to size and classified according to quality. While the measurement of electrical properties and grading of mica can be done mechanically, the quality classification is to a large extent a matter of judgment. Though the mica trade is conducted on the basis of samples, the personal factor involved in quality classification frequently leads to strong difference of opinion between the buyer and the seller. To obviate this a system of international standards and machinery for arbitration would be needed and the Indian Standards Institution have drafted one such, which has to be approved by the International Standards Institution (since the mica industry is almost entirely dependent on export). It is expected that these standards will be finalised shortly at a meeting of the International Standards Organisation.

54. *Utilisation*—No figures relating to consumption of mica in India are available, but on a rough guess it may be placed at about 7,000 lbs. a year. This is shared by railways, electric supply undertakings and iron and steel companies. The power projects under construction and those under contemplation will increase the demand for mica splittings and mica blocks if they lead to an extension of the manufacture of electrical machinery and equipment. Even this increased demand will, however, be a small fraction of the total production and there will be no difficulty in meeting it.

Large quantities of micanite or built-up mica are consumed in the electrical equipment industry and the bulk of this has to be imported as domestic production is very negligible. The possibility of setting up an adequate micanite industry which would meet the country's requirements of this material remains to be investigated.

A large quantity of mica is thrown away as waste in the mining and trimming of mica and dumped near the mines and factories. It is possible to reclaim this by grinding it by the wet or dry process and then using the ground mica as a 'filler' in various industries. The possibilities of setting up a mica grinding industry should be explored.

55. *Recommendations*—(*i*) The mica bearing areas in Bihar and Madras are fairly well known, but no detailed geological maps have yet been made. Detailed geological work is likely to bring to light new occurrences particularly in Rajasthan.

(*ii*) The Bureau of Mines in collaboration with the National Physical Laboratory should undertake research for studying the properties of mica produced from different areas and also for the classification of mica on its electrical properties. Investigations may also be directed towards devising an economic method for the manufacture of micanite and for grinding mica.

(*iii*) The possibility of setting up a Central Marketing Board for Mica as recommended by the Mica Enquiry Committee (1945) should be explored. This will reduce complaints by foreign purchasers about the quality of mica shipments.

GYPSUM

56. Gypsum ranks next to coal and iron as a mineral of great importance in the industrial economy of the country. Before the second world war, it was used mostly as a raw material in the production of cement and plaster of Paris. It has now gained in importance as a raw material in the manufacture of ammonium sulphate, an important fertiliser. It can be used as a source of sulphuric acid. With the setting up of a fertiliser factory at Sindri, increasing attention is being paid to deposits available in India.

57. *Distribution*—Gypsum deposits are known to exist in several parts of India. The more well-known gypsum-bearing regions are in Rajasthan and in South India, but smaller deposits occur also in Tehri-Garhwal, Himachal Pradesh and parts of western India. The latter have not been fully explored yet.

With few exceptions, gypsum in India occurs mostly in thin beds, veins, lenses and as isolated clusters of crystals in various formations. Anhydrite, a common associate of gypsum has not been noticed in the known gypsum deposits in India.

(*i*) *Rajasthan*—The most important deposits are in the Jodhpur, Bikaner and Jaisalmer divisions of the State. They vary in thickness from a few inches to 10 ft. and over. Reserves have been roughly estimated to exceed 40 million tons. Detailed investigations of the deposits are not yet over.

(*ii*) *Madras*—Gypsum in thin veins varying in thickness from a fraction of an inch to 6 or 7 inches and associated with clays occurs in the Tiruchirapalli district. The reserves of gypsum in the gypsum-bearing clays in this area have been estimated at 15·3 million tons to a depth of 50 ft. but the working of this gypsum is likely to be attended by a large percentage of loss. Thin beds of gypsum also occur in recent marine silts within a depth of 3 or 4 ft. in an area of over 100 sq. miles near Sulurpet, Nellore district. The total area may contain well over 1 million tons.

Gypsum in veins and thin beds and as crystals distributed in sedimentary strata is also found in Saurashtra and Kutch. The reserves are estimated at 6·4 million tons.

(*iii*) *Northern India*—Small deposits of gypsum as pockets and thin beds are also known to occur in the Dehra Dun, Nainital and Tehri-Garhwal regions of Uttar Pradesh. The reserves are estimated at about 200,000 tons. Among the other deposits are those in the Sirmur district of Himchal Pradesh, which are estimated to contain about 1 million tons, and small deposits in Bhutan, Kashmir and Rewa (Vindhya Pradesh) for which no estimates of the reserves are available.

The following table gives the reserves of gypsum in different parts of India. It should be noted that in most cases, the total workable depth or the lateral extent of the deposits has not been ascertained. In some deposits all the estimated reserves may not be economically available. The following estimates of reserves by the Geological Survey of India are only approximate :

Area	Reserves (Million tons)
Rajasthan :	
(*a*) Bikaner	20·0
(*b*) Jodhpur	16·0
(*c*) Jaisalmer	4·0
Kutch	2·0
Saurashtra	8·5
Madras :	
(*a*) Tiruchirapalli	15·3
(*b*) Sulurpet (Nellore)	0·1
Northern India :	
(*a*) U. P. hill ranges	0·2
(*b*) Sirmur (Himachal Pradesh)	1·0
TOTAL	67.1

58. *Production and consumption*—The annual production from Indian deposits from 1939 to 1950 is given below :—

	Tons
1939-43 average	60,340
1944-48 average	65,082
1949	139,944
1950	206,366
1951	203,602

At present, the annual estimated consumption of gypsum is about 94,000 tons for cement manufacture and about 2,000 to 3,000 tons for plaster of Paris. When the Sindri Fertiliser Factory comes into full production shortly, it is expected to require annually about 600,000 tons of gypsum. About 37,500 tons of gypsum are required for the manufacture of ammonium sulphate by the Fertilisers and Chemicals Ltd., Travancore. In addition, increase

in cement production envisaged in the Plan will also increase the demand for gypsum. The estimated demand for gypsum in 1955-56 is given in the table below :

(In thousand tons)

	1950-51	1951-52	1955-56
Cement	94	115	160
Fertilisers	11	12	690
Sulphuric acid	--	--	14
TOTAL	105	127	870

It will be seen from the above that the demand for gypsum will increase considerably in the next few years. At present gypsum mining is entirely confined to small quarrying operations. But when the Sindri Fertiliser Factory comes into full-scale production, mining will have to be conducted on a larger scale and mechanisation may become necessary both in mining and transport.

59. *Recommendations*—(*i*) Search for gypsum in different parts of India will have to be continued. Systematic field investigations aided by drilling should be undertaken in the known gypsum areas of Rajasthan. This will have to be undertaken by the Geological Survey of India in association with other interested agencies. (*ii*) Attention will also have to be given to the possibility of recovering gypsum from salt pans.

SULPHUR

60. Sulphur, a mineral of strategic importance, occurs in nature in the form of native sulphur and also in combination in the form of pyrites (iron sulphide) and other metallic sulphides and as sulphates, *e.g.*, gypsum, anhydrite.

61. *Distribution*—Native sulphur in deposits of large size is unknown in India, though recently some occurrences have come to light in the hill ranges to the north of India and small deposits of native sulphur produced by bacterial action on sulphates derived from sea-water have been found in the coastal tract of Masulipatam (Krishna district of Madras) and also in the Barren Island. Deposits of pyrites are more widespread and are found in Kashmir, at Taradevi near Simla, at Amjor near Rohtas in Bihar, Karwar in Bombay and in the Chitaldrug area of Mysore. There are substantial quantities of pyrites associated with the gold deposits of Wynad in the Nilagiri district of Madras. Most of the copper deposits, *e.g.* in Bihar, Sikkim, Rajasthan etc., also occur in the form of copper pyrites. Some of the Indian coals, *e.g.* Assam coal and Rewa coal are high in sulphur. These coals may be considered as a source of sulphur if it can be economically recovered. The Fuel Research Institute is investigating this.

No detailed estimates are available of the quantities of sulphur and pyrites in the deposits mentioned above. Investigations are, however, in progress to assess the quantity and quality of pyrites available at Amjor and Karwar. Quantities of sulphur estimated to be of the order

of 5,000 to 6,000 tons per year escape into the air in the roasting of copper ores at the Indian Copper Corporation's works in Bihar. The question of recovery of the sulphur as such or its conversion into sulphuric acid is under consideration.

62. *Consumption of sulphur*—As there is no production of sulphur in India, the country's requirements have to be met by imports from abroad. The imports of sulphur during the last few years is given in the table below :

Year	Quantity tons	Value Rs. (lakhs)
1941	29,400	54·00
1945	9,900	16·88
1946	52,300	105·73
1947	29,800	44·32
1948	38,300	61·65
1949	41,000	70·00
1950	55,000	110·00
1951	38,507	121·48

It will be seen that during the last three years, the value of imports has averaged about Rs. 100 lakhs.

The present annual requirements of sulphur for all purposes is estimated at 65,000 tons, but actual consumption is limited by scarcity of supplies to 50,000 tons. The major consumer of sulphur is the sulphuric acid industry whose output has increased from about 25,000 tons in 1939 to a little more than 100,000 tons in 1950. The demand for sulphuric acid will, it is estimated, increase to about 215,000 tons by 1955-56. The requirements by 1955-56 of sulphur for sulphuric acid and for other purposes is estimated at about 85,000 tons.

63. *Recommendations*—(*i*) In view of the importance of sulphur and the absence in India of deposits of natural sulphur, it is necessary to undertake a thorough examination of the known sources and possible sources. The deposits at Amjor (Bihar), Taradevi (Simla), Chitaldrug (Mysore) and Polur (Madras) should be investigated in detail.

(*ii*) Wherever possible, use of native sulphur should be substituted by pyrites or other alternative raw materials.

(*iii*) The question of recovery of sulphur from the smelting works of the Indian Copper Corporation, the Metal Corporation of India and of other plants roasting metallic sulphides should also be pursued.

(*iv*) The question of using gypsum as a raw material for the manufacture of sulphuric acid should be considered to the extent possible.

(*v*) The Fuel Research Institute should conduct research into desulphurisation of coals of Assam and other high sulphur coals and into the commercial recovery of sulphur.

PROGRAMME OF MINERAL DEVELOPMENT

64. In the foregoing sections an attempt has been made to set out the urgent work remaining to be done in respect of mineral development including exploration, estimation of reserves, improvement of mining, collection and organisation of statistics and research into the beneficiation and utilisation of minerals.

The Government organisations mainly concerned in the execution of this programme are :

(*i*) The Geological Survey of India ;

(*ii*) The Indian Bureau of Mines ; and

(*iii*) The National Laboratories like the Fuel Research Institute, the National Metallurgical Laboratory and the Central Glass and Ceramic Research Institute.

THE GEOLOGICAL SURVEY OF INDIA

65. The Geological Survey of India is mainly concerned with geological mapping and mineral exploration, investigation of groundwater, examination of dam sites and other engineering aspects of geology. The execution of the programme of mineral development would need expansion of this organisation and this has been provided for.

India has obtained the services of three experts under the Point Four Programme. It will be desirable to make every effort to retain the specialists for a minimum period of three years so that full advantage may be taken of their experience in the training of junior officers.

66. Mention has been made in the sections dealing with different minerals of the investigations that have to be undertaken during the five year period. A number of investigations will have to proceed simultaneously to the extent possible with the personnel and resources at command.

THE INDIAN BUREAU OF MINES

67. The duties of the Bureau of Mines include the inspection of mines for the improvement of mining methods and conservation of minerals, the proving and estimation of reserves by detailed prospecting and drilling, collection and dissemination of detailed statistics of the mineral industry, advising Government on all matters relating to development of minerals and grant of mineral concessions, undertaking research for the utilisation of low grade minerals, recovery of useful constituents and upgrading of minerals.

For the discharge of these functions the Bureau of Mines should be strengthened adequately and provision has been made for this.

68. In addition to inspection of mines for enforcing systematic working, ensuring conservation and adoption of suitable processes for upgrading of low grade ores, the Bureau of Mines will have to undertake during the five year period the following work :

(*i*) Drilling for coal, iron ore, manganese ore, chromite, bauxite, copper and lead and zinc in connection with the proving of resources in collaboration with the Geological Survey of India.

(*ii*) Collection of statistics and data on the present status and requirements of the mining industry, and specially of :

(*a*) production of different minerals by grades,

(*b*) stocks at the beginning of each year,

(*c*) distribution according to regions within the country and according to destination of export,

(*d*) cost of production for comparison of the economics of mining in different areas ;

(*e*) mineral markets in India and abroad,

(*f*) trends in international mineral trade,

(*g*) consumption of minerals, both domestic and imported, in various industries ;

(*h*) productivity of mining labour, and

(*i*) mineral tariffs and taxes and their effect on the mining industry.

The National Research Laboratories

69. Three National Laboratories, the Fuel Research Institue, the National Metallurgical Laboratory and the Central Glass and Ceramic Research Institute are closely connected with research on minerals and they have to undertake the following lines of research ;

(*i*) *The Fuel Research Institute*

(*a*) Physical and chemical survey of all coal seams which are now being worked. This work is already under way and three regional coal survey stations have been established and funds have been allotted both for capital and recurring expenditure ;

(*b*) Coal washing and blending—The blending work is being done by the coal blending and coking sub-committee at Jamshedpur with 50% contribution from the Council of Scientific and Industrial Research ;

(*c*) Production of coke from weakly coking coals ;

(*d*) Low temperature carbonisation, hydrogenation and desulphurisation of Assam and other high sulphur coals ;

(*e*) Fischer-Tropsch synthesis and gasification of coals ; and

(*f*) Briquetting methods.

Practically all this work has to be carried out on a semi-pilot plant scale. It is suggested that the Fuel Research Institute should be financed adequately from the proposed consolidated cess on coal production.

(ii) The National Metallurgical Laboratory

(*a*) Beneficiation of metallic ores (in collaboration with the Bureau of Mines). An ore dressing section has already been organised and work is in progress ;

(*b*) Manufacture of zirconium, titanium, magnesium etc., and investigation of their alloys. (This work is already included in the Metallurgical Laboratory's programme.)

(iii) The Central Glass and Ceramic Research Institute

(*a*) Investigation of available raw materials for the manufacture of high grade and optical glasses and refractories. Work on the availability of sands and clays of suitable quality is in progress ;

(*b*) Investigation of the properties and suitability of available raw materials in relation to the production of ceramic wares, glazes etc. This work is also in progress in collaboration with the Geological Survey of India ; and

(*c*) Manufacture of alumina and zirconia refractories and insulators ; the Institute has to be equipped for the testing of insulators.

Co-ordination of Mineral Development and Research

70. The Ministry of Natural Resources and Scientific Research have on the recommendations of the Planning Commission set up a Technical Co-ordination Committee (with representatives from all these organisations) to co-ordinate the work of these organisations. The Committee will meet from time to time to review the progress of the work of these organisations and advise the Ministry to adopt their activities towards the achievement of the objects of the Five Year Plan outlined above.

CHAPTER XXVIII

SCIENTIFIC AND INDUSTRIAL RESEARCH

The vital role of science in modern life is now generally recognised. Apart from the vast changes it has brought about, the development of a scientific temper in the people is considered important. In the planned economy of a country, science must necessarily play a specially important role. Improvements in techniques evolved as a result of scientific research bring about great increases in production in the different sectors of the economy. National resources are augmented by the substitution of cheap and abundant materials for those in scarce supply and by finding uses for materials which have remained unutilised. A balanced programme of research covering every sector of the economy is essential therefore for the development of a country. We have made our recommendations for research in agriculture, forestry, mineral development, etc. in the respective chapters which deal with these subjects. In this chapter we give a short account of the growth of institutions in other spheres of scientific research in recent years, their achievements and their programmes of work.

2. Prior to World War II, very little attention was given to the problem of scientific and industrial research in this country. A number of universities and institutes carried out research, mostly on fundamental aspects of science. Certain industries also had their own research organisations. However, industry depended, by and large, on foreign techniques and did not develop research programmes of its own. It was left to World War II and the emergence of India as a major supply centre for the armed forces in the East to focus attention on the importance of scientific and industrial research. A large number of products which had been imported into the country had to be manufactured to meet both civilian and military needs. Indian substitutes had to be found for imported materials and processes had to be developed which would use these materials in place of imported ones. In these circumstances the Government of India constituted the Board of Scientific and Industrial Research in 1940. The Council of Scientific and Industrial Research was formed in 1942. Much useful work was done under the auspices of these two bodies during the war. A number of problems, mostly related to military needs, were tackled and processes were developed for producing essential articles from indigenous materials. A notable example of work during wartime is the development of processes for the use of vegetable oils in the manufacture of lubricants. This helped in meeting the shortage of petroleum lubricants and also had the advantage of finding suitable uses for Indian oil seeds at a time when the demand for them had been reduced due to the closure of European markets.

3. Since independence there has been a greater emphasis on the provision of additional facilities for the promotion of scientific and industrial research. The most significant development in this sphere has been the establishment of a chain of national laboratories and research institutes in different parts of the country. These institutions are :

1. The National Physical Laboratory, New Delhi.
2. The National Chemical Laboratory, Poona.

3. The National Metallurgical Laboratory, Jamshedpur.
4. The Fuel Research Institute, Jealgora.
5. The Central Food Technological Research Institute, Mysore.
6. The Central Drug Research Institute, Lucknow.
7. The Central Glass and Ceramics Research Institute, Calcutta.
8. The Central Road Research Institute, Delhi.
9. The Central Building Research Institute, Roorkee.
10. The Central Leather Research Institute, Madras.
11. The Central Electro-chemical Research Institute, Karaikudi.

In the case of most of these institutions the process of establishment is nearly complete, but in some, like the Central Leather Research and Central Building Research Institutes, only nucleus units have been functioning so far. The Central Electro-chemical Research Institute has not started functioning yet. The Plan provides for the completion of buildings and the installation of the necessary equipment to enable the laboratories to function fully. In addition, the following three research institutes are proposed to be established during the period of the Plan :

1. A Radio and Electronics Research Institute,
2. A Mechanical Engineering Research Institute, with special emphasis on the study of problems of cottage and small-scale industries, and
3. A Central Salt Research Station.

4. The National Physical Laboratory in Delhi and the National Chemical Laboratory at Poona deal with general industrial problems and are responsible for investigations of the 'residuary' type—that is, investigations relating to industries for which no specialised institutions have been established. The remaining laboratories are specialised institutions dealing with problems of specific industries. The main function of all these institutes is to look for new knowledge, fundamental or applied. They will examine existing industrial processes with the object of introducing improved techniques of manufacture and the production of standard materials, wherever possible, at reduced costs. At the same time, they will evolve new processes and new products, preferably from indigenous raw materials, and assist in the starting of new industries in the country.

5. The establishment of national laboratories and research institutes has a special importance in a country like India where medium and small-scale producers contribute a considerable proportion of industrial production. These industries cannot afford to have research facilities of their own, as the larger producers can. The research institutions will bring the fruits of research within their reach and enable them to reduce costs and improve the quality of their products. The establishment of these laboratories and institutes is thus complementary to the objective of promoting the development of small-scale and cottage industries. In addition to these major research institutes, it is desirable to direct particular attention to the improvement of techniques in cottage industries. Such improvement may ultimately produce a far greater result all over the country than a limited number of large-scale industries.

6. Most of the laboratories and institutions have already begun work by undertaking assessment of resources, conducting tests and evolving standards, giving advice to the Government and to industry and developing useful processes. Laboratory investigations on a number of projects have been completed. Amongst these are the manufacture of calcium diphosphate, nicotine from tobacco waste, citric acid, calcium gluconate, vitamin 'C', electrolytic production of beryllium oxides, etc. Work on coal washing and coal blending has led to several useful applications. The possibilities of using Didwana salt-cake in the manufacture of certain types of glass have been established and compositions for the manufacture of railway signal glasses worked out. Investigations on improvements in the quality of salt have been completed and a study of the structure of bamboo has brought out the possibilities of bamboo as a raw material for the production of newsprint.

7. In many cases, however, the laboratories are just emerging from their formative stage. As mentioned above, for some of them only nucleus units have been functioning. But even where the establishment is nearly complete, initial difficulties of finding suitable personnel, getting proper equipment and organising appropriate research programmes remain. As these difficulties are overcome and research programmes progress, the contributions of the laboratories and institutes will progressively increase in volume as well as in significance.

8. In the chapter on 'Mineral Development' we have indicated some lines of research work for the Fuel Research Institute, the National Metallurgical Laboratory and the Central Glass and Ceramics Research Institute. In the chapter on 'Industrial Development and Policy' we have mentioned some important measures for the effective utilisation of the by-products and waste products of certain industries. We have also drawn attention to the need for research into the development of new processes for the utilisation of local resources on a long-term basis. We have laid down certain targets and expansion programmes in the private and public sectors of industry. Laboratory investigations on some of the problems mentioned above have been undertaken by the national laboratories. Utilisation of lime sludge from Sindri, manufacture of dicalcium phosphate, kotka phosphate and nitrophosphate fertilisers, and production of sulphur by microbiological reduction are cases in point. There are other items like production of caustic soda and sulphuric acid from sodium sulphate, sulphur from magnesium sulphate, manufacture of calcium lactate, para-amino-salicylic acid, new paints, varnishes and pigments, etc. in regard to which research can substantially assist. We suggest that the Council of Scientific and Industrial Research should examine these targets in consultation with industry and arrive at a programme of research to assist in their achievement.'

9. The national laboratories and research institutes are working in collaboration with the Indian Standards Institution in laying down standards for various raw materials and finished products within their respective fields. We consider this work to be of great importance. Specification of proper standards is essential for improving the quality of products especially of raw materials and semi-manufactured goods in which small-scale production prevails. Such standards, besides benefiting the domestic consumers, are of great value for the export trade. Lack of uniformity and adulterations (which are helped by the absence of standard specifications) are the principal reasons for Indian products being rated low and receiving low prices in foreign markets.

PROGRAMME OF LABORATORIES AND INSTITUTES

10. *The National Physical Laboratory*—This laboratory conducts research on both the fundamental and applied aspects of physics. Among the investigations which have been undertaken at the laboratory, mention may be made of the development of various types of radio components, carbon products, scientific instruments and glass apparatus and inks. The indelible ink used for marking voters in the recent general elections was developed at the laboratory, which also manufactured the entire quantity needed for election purposes. Investigations have also been undertaken on rare minerals and the use of solar energy. The laboratory is also undertaking a number of projects in fundamental research. A scientific documentation centre has been set up in co-operation with UNESCO to provide facilities for the translation and copying of scientific literature to scientific workers in all parts of the country.

11. *The National Chemical Laboratory*—This laboratory has carried out a number of investigations on processing of indigenous raw materials, extraction of new substances and finding new uses for materials in industry. Amongst these mention may be made of the following : production of tobacco seed oil and extraction of nicotine from tobacco waste, development of kamla seed oil (to replace tung oil) for the paint and varnish industry and improvements in extraction of seed and castor seed oil ; development of new methods of utilisation of chlorine, and research on the manufacture of phosphatic fertilisers. Fundamental research is being done in all branches of chemistry. The laboratory is devoting special attention to demonstration of products which can be manufactured on a small scale.

12. *The National Metallurgical Laboratory*—The laboratory has been engaged on a number of investigations on beneficiation of ores. Reports of researches on iron-ore, ilmenite, low grade chrome-ore, pyrites and manganese-ores have been published. Further investigations are in progress on beneficiation of pyrites, chrome-ore, wolfram and other ores found in various parts of the country. The laboratory is also conducting investigations on alloy steels, the production of certain classes of refractories and other subjects of interest to the metallurgical industries.

13. *The Fuel Research Institute*—This institute has been engaged on a detailed physical and chemical survey of Indian coals. The work includes testing large numbers of samples of coals from various coal fields as well as detailed investigations of particular seams and fields. As an example of the latter may be mentioned the survey of the Bermo-seam from which coal is being supplied to the Bokaro power station. A number of stations have been set up in different coal fields for the purpose of the survey. Research has also been conducted at the institute on the blending and washability of Indian coals. The importance of this work in view of the limited resources of high-grade coal has been stressed in the chapter on minerals. Investigations have also been conducted on the possibilities of manufacture of synthetic petroleum. Work on these subjects will be continued during the period of the Plan. Other subjects which are proposed to be taken up include desulphurisation of Assam coals and detailed work on various aspects of the chemistry of Indian coals.

14. *The Central Glass and Ceramics Research Institute*—The object of the institute is to assist in the rationalisation and improvement of Indian glass and ceramic industries. The institute has started research on improving the quality of bottles and other glass containers and the development of containers which are not made in India at present. A process has also been developed for the manufacture of railway signal glasses. A survey of raw materials for the glass and ceramic industries is being carried out in co-operation with the Geological Survey of India. These research and survey programmes will be continued during the period of the Plan and work will be initiated on such subjects as beneficiation of raw materials and utilisation of waste materials like mica wastes, evolving substitutes for scarce materials like borax and selenium and manufacture of special types of glass which are not manufactured in the country so far.

15. *The Central Drug Research Institute*—The institute has started research on Indian drugs with a view to isolating their active materials and developing economic processes for the isolation of these. It has compiled an Indian Pharmaceutical Codex, as a companion volume to the Indian Pharmacopœial List and is undertaking a systematic survey of the medicinal plant resources of India. The institute will conduct experiments on improvement of medicinal plants so as to increase their active principle content and for their systematic cultivation. As India produces a great variety of herbs and drugs which are used in indigenous systems of medicines and a number of which are also exported in appreciable quantities, work at the institute will make a significant contribution to the improvement of national health, as indigenous herbs and drugs are the principal medicines used by the vast majority of the people of this country.

16. *The Central Food Technological Research Institute*—A principal objective of the institute is to assist in the solution of the food problem by technological as distinct from biological and agricultural methods. The institute has undertaken a series of investigations on the nutritive value of various Indian foods, possibilities of substitution of cereals by processing and fortification of roots and tubers etc. The institute is also conducting surveys on dietary habits and dietary deficiencies. Technological problems of various food processing industries, utilisation of food and agricultural wastes, and problems relating to the storage of cereals and perishable foods are the other main lines of investigation. Attention is also being devoted to the processing and preservation of fruits and vegetables with particular reference to the preparation of new fruit products.

17. *The Central Leather Research Institute*—As mentiond above, only a nucleus unit of the institute has been functioning so far. Investigations are being undertaken on the use of indigenous tanning materials and on the normal salting of kips in order to lay down standards and prevent undue weightage of kips for export. Other main lines of research at the institute will include improvements in production and use of indigenous tanning materials ; development of substitutes for materials like wattle bark which are not produced in any significant quantity in the country, improvements of tanning processes and development of suitable leathers for specialised needs.

18. *The Central Road Research Institute*—Here also only a nucleus unit has been functioning so far and due to difficulties of obtaining suitable equipment, it has been possible to undertake only a limited number of investigations. These include research on various types of road materials and soils and studies on improvement of alignment, layout and signalisation of roads. The institute is devoting special attention to the problems of rural roads and rural transport. It is working in close co-operation with the Central Public Works Department, the Central Roads Organisation and the Public Works Departments of State Governments, so that the problems experienced in the field can be studied at the institute and results obtained at the institute can be applied to improving road building techniques.

19. *The Central Building Research Institute*—Research on building materials (including use of new materials) and on building techniques and practices is the main function of this institute. It will place special emphasis on the study of problems connected with providing low-cost houses for lower and middle income groups and for rural areas. Suitable designs for structures have to be evolved for such houses and the use of cheap and abundantly available materials has to be encouraged in place of comparatively scarce and expensive materials like steel. The institute is still in the formative stage and only a nucleus unit has been functioning so far.

20. *The Central Electro-Chemical Research Institute*—The main function of the institute is to carry out investigations with a view to increasing the productive capacity and efficiency of electro-chemical industries and fostering new electro-chemical industries and utilising Indian raw materials. The institute is expected to start functioning shortly.

21. Besides these laboratories and research institutes, the Council of Scientific and Industrial Resarch has made contributions towards the promotion of fundamental and applied research at a number of institutions and universities. Surveys of particular resources from time to time, arrangement of symposia and conferences and advice to industry on specific problems are important items in the programme of scientific and industrial research. Deserving of special mention is the compilation and publication of 'Wealth of India', an encyclopædic record of Indian raw materials and industrial products.

22. The Atomic Energy Commission (India) is sponsoring research in nuclear science and in subjects relating to the production and development of atomic energy for economic and industrial purposes. These projects are being worked out at the Commission's own laboratories and at other research institutes and university laboratories. One of the main objects of the Commission is to train workers in these fields for both research and its application on a large scale. In this the Commission has met with success and teams of selected workers are under instruction at the Tata Institute of Fundamental Research in various branches of nuclear physics, instrumentation, high vacuum work, design, etc. The Commission has set up a unit for producing radiation meters and othe electronic instruments to meet the demand for such equipment for laboratory work and geological surveys.

23. The financing of research has so far been mainly the responsibility of the Central Government. To a great extent this will have to continue, though State Governments,

universities, etc., will, no doubt, also further research. In the chapter on industrial development and policy we have referred to the need for initiative and interest on the part of industry in fostering industrial research. We hope that as industry becomes more and more research minded, it will begin to support research on a large scale. Already several prominent industrial concerns have made substantial contributions towards the cost of establishing national laboratories. The following industrial-research associations have also been established by the industries concerned at their own cost, Government assisting with substantial contributions and offering special facilities such as allowing contributions for research to be treated as a part of the normal business expenditure of an industrial concern under Section 10 (2) XIII of the Indian Income-tax Act:—

1. The Ahmedabad Textile Industry's Research Association, Ahmedabad.
2. The Silk and Art Silk Mills Research Association, Bombay.
3. The South India Textile Industry's Research Association, Coimbatore.

24. The completion of laboratory investigations is only the first step in the application of a scheme for utilitarian purposes. Before the results are actually translated into commercial production, experimentation on a pilot plant is necessary in many cases with a view to obtaining technical data for assessment of the likely form the ultimate production unit is to take and gauging possible difficulties that are likely to be met with. This step also provides preliminary data on the economic possibilitics of the process. In the conditions under which industrial development has taken place in this country, this duty has to devolve upon the laboratories concerned. As the work of the laboratories developes and their activities gather momentum, their need for pilot plants will also expand. In the development programmes for scientific research financial provision has been made for purchase of pilot plant equipment for most of the laboratories, as required.

25. For scientific research to make its full contribution it is necessary that the results of laboratory work should be utilised in actual practice by being translated into commercial production. The importance of this subject was recognised in the establishment of the industrial Research Utilisation Committee (now Industrial Liaison Committee) in 1941. The results which have attended the efforts of this Committee are encouraging but much still remains to be done. The Council of Scientific and Industrial Research has devoted much attention to securing a better utilisation of the results of research and has come to the conclusion that even when pilot plant experiments have been completed, there may in several cases still be left a gap before commercial production can be undertaken. It would be necessary in such cases to instal semi-commercial or prototype plants to demonstrate effectively the new processes and their economic possibilities. When this has been done, it will be possible to decide whether the industrial development of the research is to be taken up as a State-sponsored undertaking or it can be handed over to private industry for development on a commercial scale. For this purpose, the establishment of a National Research Development Corporation of India has been proposed and we think that this proposal should be accepted. If the Central Government decide upon such a corporation, funds could be provided. While institutions engaged in research have to develop and maintain contacts with industry so that

the results obtained by them are applied in practice, it is at the same time the responsibility of managements in industry to be on the alert for new inventions and innovations in their field of work.

26. Promotion of scientific research on a large scale calls for an adequate supply of trained personnel. For manning the research institutes and also for running industries, a large number of scientists and technicians will be required. In the chapter on Education we have described the steps proposed for meeting the shortage of higher technical and scientific manpower.

CHAPTER XXIX

INDUSTRIAL DEVELOPMENT AND POLICY

INDUSTRIALISATION AND ECONOMIC DEVELOPMENT

We have emphasised in the previous chapters the need for a substantial and rapid improvement in agriculture in order to increase the supply of foodgrains and raw materials needed in the country. The fact that at the present juncture it is necessary to give the highest priority to agricultural development including the building up of the necessary basic services like irrigation and power does not, however, mean that industrial development is in any sense less important. In the development of an underdeveloped economy there is really no conflict between agricultural and industrial development. Improvement in agriculture cannot proceed beyond a point unless the surplus working force on the land is progressively diverted to industries and services. Similarly, industrial development itself cannot advance sufficiently without a large increase in the supply of food necessary to maintain the population thus diverted and of the raw materials needed to enable industries to expand production. The fact that the productivity of labour in industry is much higher than in agriculture also points to the need for rapid industrial development. Moreover, in an underdeveloped country the surpluses created in the industrial sector are likely to be available for investment relatively more easily than surpluses in the agricultural sector. The pattern of industrialisation to be adopted, that is, the relative emphasis on capital goods industries and consumer goods industries and the degree of capital intensiveness in different lines of industry, has, of course, to be decided in the light of several technical, economic and social factors. But there is no doubt that over a period the desired rate of economic progress will necessitate a rapid diversification of the occupational structure through development of industry, together with trade and transport.

INDIAN INDUSTRIAL STRUCTURE

2. The relative backwardness of industiral development in India may be judged from the fact that in 1948-49 factory establishments accounted for only 6·6 per cent. of total national income. The total labour force engaged in such establishments is about 2·4 million or 1·8 per cent. of the working population in the country. While in the aggregate India's industrial output may look massive, per head of population it is very much lower than the industrial output in advanced countries.

3. Prior to the first world war the only major industries which had developed substantially were cotton and jute textiles, for which the country had exceptional natural advantages. The industrial development since the twenties is associated with the adoption of a more progressive industrial and fiscal policy. Between 1922, when the policy of discriminating

protection was adopted, and 1939 the production of cotton piecegoods in the country increased 2 1/2 times, the production of steel ingots rose 8 times, that of paper went up 2 1/2 times and in the case of sugar, within a period of 4 years from 1932 to 1936, the country was able to produce its entire requirements. The growth of the cement industry, which by 1935-36 produced about 95 per cent. of the total consumption in the country at the time, belongs to this period. The production of matches, glass, vanaspati, soap and several engineering industries also recorded large increases. Towards the close of the inter-war period, the manufacture of electrical equipment and goods was also initiated.

4. The second world war created conditions for the maximum utilisation of existing capacity in Indian industries. This was the major factor responsible for the increases in industrial production recorded. Conditions were, however, not favourable for the setting up of large scale equipment and plant for new industries. Several industries such as ferro-alloys, non-ferrous metals like aluminium and antimony, diesel engines, pumps, bicycles and sewing machines, chemicals like soda ash, caustic soda, chlorine and superphosphate, and certain types of machine tools and simple machinery were started on a modest scale during this period, but the major impetus of the war was felt in the sector of medium and small-scale industries, such as light engineering, pharmaceuticals, medicines and drugs, cutlery, etc. In the immediate post-war years, there was considerable new investment activity leading to the establishment of industries like rayon, automobiles, ball and roller bearings, carding engines, ring frames and locomotives. Several new units were started and existing units expanded in industries like fertilizers, cement, sheet glass, and the manufacture of cautstic soda and sulphuric acid. Industrial development during the war and the post-war period was influenced largely by the prevailing inflationary conditions and scarcities, with the result that long term factors such as the most advantageous location or scale of operation, the availability of raw materials, the size of the market and the adequacy of the financial and technical organisation for successful operation under competitive conditions did not receive the attention they deserved. In the established industries the need during the war period to work multiple shift and the difficulties in the way of securing imports for depreciation and replacement led to a large accumulation of arrears which it will take the country several years to make good.

5. The major emphasis in industrial development in India has been on consumer goods industries, while the development of basic capital goods industries has lagged behind. The output of consumer goods industries such as cotton textiles, sugar, soap, matches and salt may be said to be on the whole sufficient to meet the existing low level of demand in the country in the present stage of economic development. In the case of capital goods industries and industries manufacturing intermediate products, the available capacity in the country is in most cases inadequate even for present requirements. The production of iron and steel in the country is hardly 50 per cent. of the existing volume of demand, and it is evident that in planning the development of a basic industry like iron and steel, account has to be taken not only of immediate requirements but also of the needs of the country over a fairly long period A high rate of industrial advance cannot be achieved without increasing substantially the

production of iron and steel and of aluminium, ferro-alloys, caustic soda and soda ash, fertilizers and petroleum products, for all of which demand at present is much in excess of domestic supply. In respect of the manufacture of plant and machinery required by various industries, only a small beginning has so far been made with the textile machinery industry. The large developments in power generation now under way have to depend on generating equipment from abroad. In the manufacture of synthetic drugs and antibiotics and of dyestuffs and organic chemicals, only small beginnings have been made. The objective of industrial planning is to make good these deficiencies and lacunae as much as possible and to initiate development which will become the basis for the cumutlative expansion of this sector.

National Planning and the Private Sector

6. The Commission's approach to the problem of development and the respective roles of the public and the private sectors in securing such development have been set forth in an earlier chapter. The essentials of government policy in the sphere of industrial development have been stated in the Industrial Policy Resolution of April 1948. The Resolution lists certain industries like the manufacture of arms and ammunition, the production and control of atomic energy and the ownership and management of railway transport as being reserved exclusively for the Central Government. In the cases of certain other industries also such as coal, iron and steel, aircraft manufacture, ship-building, manufacture of telephone, telegraph wireless apparatus and mineral oils, the State, including the Central and State Governments and other public authorities, will be responsible for further development except to the extent that it regards the co-operation of private enterprise necessary for the purpose. The rest of the industrial field is to be open to private enterprise, individual as well as cooperative, but the State will intervene whenever the progress of any industry under private enterprise is found to be unsatisfactory. Central regulation and control is envisaged for 18 specified industries of special importance from the points of view of the investment and technical skill involved. We believe that within the framework of this policy, it is possible to have a programme of industrial development which meets the country's present needs.

7. The distinction between the public and the private sector relates to the mode of operation rather than to the ultimate objective. Private enterprise operating in terms of legitimate profit expectations and the efficient use of available resources has an important part to play in developing the economy. The scope and need for development are so great that it is best for the public sector to develop those industries in which private enterprise is unable or unwilling to put up the resources required and run the risks involved, leaving the rest of the field free for private enterprise. In this matter of investment of the limited resources available to the public sector, there should be complete coordination between the plans of the State Governments and of the Central Government. The nationalisation of the existing enterprises, which means acquisition by Government of the existing productive assets has, in our view, only a low priority, especially as most of the purposes of such a transfer of ownership can be served by judicious regulation. In a planned economy, the justification of private enterprise is that,

within the framework of national policy it is capable of contributing to the fulfilment of the objectives defined in the plan. This means inevitably that it has to accept new obligations towards the worker, the investor and the consumer and has to maintain a high standard of integrity and efficiency. The large volume of resources needed for all-round development of the economy can, in our judgement, be secured only if the public and the private sectors co-operate closely. Such co-operation is also necessary from the point of view of utilising to the best advantage the limited resources of initiative, technical skill and business experience available in the country.

8. Mention was made in the Draft Outline Report of the Industries (Development and Control) Bill, 1949 which was then under Government's consideration. The Industries (Development and Regulation) Act 1951 incorporates some of the suggestions made by the Commission in the Draft Outline Report. The principal object of this Act is to enable the Government to implement its policy for the development and regulation of industries along the lines stated above. The Act is to apply to 37 industries listed in the first schedule. These include : (*a*) consumer goods industries like cotton and woollen textiles, vanaspati and vegetable oils, sugar and salt, pharmaceuticals and drugs, etc.; (*b*) capital goods and producer goods industries like iron and steel, locomotives and rolling stock, non-ferrous metals and alloys, heavy machinery for industry including ball and roller bearings, gear wheels, etc., and machine tools ; (*c*) industries producing fuel such as coal, power and industrial alcohol, motor and aviation fuel, and other oils ; (*d*) industries producing machinery and equipment for the generation, transmission and distribution of electric energy, electric motors, batteries and electrical goods ; (*e*) heavy chemicals including fertilizers; (*f*) automobiles including tractors, aircraft, ship-building and telephones, telegraph and wireless communication apparatus ; and (*g*) various others, such as arms and ammunition, agricultural implements, mathematical and scientific instruments, small and hand tools, sewing and knitting machines, bicycles, hurricane lanterns, glass and ceramics. The important provisions of the Act are—

(*i*) All the existing industrial undertakings in the scheduled industries have to be registered with the Government within a prescribed period ;

(*ii*) No new industrial unit can be established or substantial extensions to existing plants made without a licence from the Central Government ;

(*iii*) The Government can order an investigation in respect of any scheduled industry or undertaking if, in its opinion, there has been or is likely to be an unjustifiable fall in the volume of production in the industry or undertaking or if there is a marked deterioration in quality or an increase in price for which there is no justification ; a similar investigation can also be ordered in respect of any industrial undertaking being managed in a manner likely to cause serious injury or damage to consumers ;

(*iv*) In the event of an industry or undertaking not carrying out the directions issued after such an investigation, the Government can take over its management,

9. For the purpose of advising the Government on matters concerning the development and regulation of the scheduled industries, the Act provides for the setting up of a Central Advisory Council representing owners, employees, consumers and certain other classes including primary producers. This Council must be consulted in regard to the making of rules under the Act and the exercise by the Central Government of powers relating to the issue of directions to industrial undertakings or the taking over of the same as provided for under the Act. Such a Council has already been set up.

10. The major instrument envisaged under the Act for establishing the necessary liaison between the public and private sectors and for ensuring that private industry conforms more and more to the planned pattern of development is the institution of Development Councils. The question of the development and regulation of industries is not one merely of how the Government should exercise certain powers, but of the kind of machinery which can work from within each industry and help bring about a steady improvement in the standards of productivity, quality of service and management. Such a machinery should provide those interested in the industry, that is, the employers, the employees and the public at large, a continuous opportunity to make a detailed study of the problems of the industry including its various constituent units, and to implement a programme of development in conformity with the needs of the industry and the overall pattern laid down in the Plan. The Industries (Development and Regulation) Act empowers the Central Government to establish Development Councils in scheduled industries. The functions which may be assigned to these Development Councils have been listed in the second schedule of the Act. The more important of these are :

(1) to recommend targets for production, to co-ordinate production programmes and to review progress from time to time ,

(2) to suggest norms of efficiency with a view to eliminating waste, obtaining maximum production, improving quality and reducing costs ,

(3) to recommend measures for securing fuller utilisation of installed capacity and for improving the working of the industry particularly of the less efficient units ,

(4) to assist in the distribution of controlled materials and to promote arrangements for obtaining materials for the country,

(5) to promote or undertake scientific and industrial research and the collection and formulation of statistics,

(6) to investigate possibilities of decentralising stages and processes of production with a view to encouraging the growth of allied small-scale and cottage industries ,

(7) to promote the training of persons engaged or proposing engagement in the industry in technical subjects and the retraining in alternative occupations of persons engaged in or retrenched from the industry, and

(8) to undertake enquiries for the purpose of tendering advice to the Government on matters referred to the Development Council.

These Development Councils will need adequate administrative and technical staff which will be provided by the Government. This procedure will not only enable the Development Councils to function efficiently but will also assist the Government in building up a cadre of trained officials conversant with the economic and administrative problems of various industries and capable, if need arose, of undertaking managerial responsibilities. For meeting the expenditure involved, the Act provides for the levy of a cess on goods manufactured in any scheduled industry, the maximum rate of such a levy being annas two per cent. of the value of the goods. The proceeds of this cess would be utilised to meet, besides the administrative expenses of the Development Council, expenditure for the promotion of scientific and industrial research pertaining to the industry, for improvements in the design and quality of the products of the industry and for providing facilities for the training of technicians and labour in the industry concerned. Development Councils along these lines are to be set up immediately for seven industries, namely, heavy chemicals (acid) and fertilizers, heavy chemicals (alkali), paper including newsprint and paper board, leather and leather goods, bicycles and parts thereof, glass and ceramics, and internal combustion engines and power driven pumps. The question of setting up a Development Council for the textile industry is under Government's consideration. The establishment of Development Councils for other industries will have to be planned in the light of the experience gained with the Councils now being set up.

Industrial Priorities in the Plan

11. In defining the priorities for industrial development within the period of the Plan, it is necessary to take into account the immediate objectives in view, the resources available and the broad framework of policy in regard to the operation of the public and private sectors outlined above. In view of the fact that an increase in agricultural production has been accorded the highest priority in the Plan, the resources available in the public sector for the expansion of industries are necessarily limited. The Plan provides for completion of the various industrial projects already under implementation by the Central Government or by the State Governments. In addition, the Central Government has a special responsibility for establishing certain defence industries so as to safeguard and develop the defence potential of the country. Defence industries such as arms and ammunition and explosives, military aircraft and control instruments are in a class by themselves and although they have inevitably a high priority, no more than a modest provision can be made for them at the present stage.

12. In the light of these considerations, we suggest the following general order of priorities in the industrial field :

(1) fuller utilisation of existing capacity in producer goods industries like jute and plywood and consumer goods industries like cotton textiles, sugar, soap, vanaspati, paints and varnishes,

(2) expansion of capacity in capital and producer goods industries like iron and steel, aluminium, cement, fertilisers, heavy chemicals, machine tools, etc.,

(3) completion of industrial units on which a part of the capital expenditure has already been incurred , and

(4) establishment of new plants which would lend strength to the industrial structure by rectifying as far as resources permit the existing lacunae and drawbacks, *e.g.*, manufacture of sulphur from gypsum, chemical pulp for rayon, etc.

13. The emphasis on fuller utilisation of existing capacity must necessarily be a prime consideration in policy, for where such capacity exists increased production can usually be secured at diminishing cost per unit. The increase in productivity per unit of resources already employed in such industries can make a vital contribution to the increase in total production so urgently needed at the present time. It is a matter of satisfaction from this point of view that considerable progress has been made in recent months in the direction of increasing the supply of raw materials for major industries with the result that significant improvement has been recorded in the index of industrial production in the country. In so far as failure to utilise existing capacity fully is due to factors other than the availability of raw materials a careful analysis will have to be made of the difficulties pertaining to each industry and the necessary steps to obviate them will have to be taken expeditiously.

14. Expansion of capacity in industries which produce capital goods and producer goods is necessary, firstly, in order to meet the additional demands on them on account of the development of agriculture, irrigation and electricity during the period of the Plan and, secondly, for establishing a better balance in the industrial structure. Iron and steel are of basic importance to development whether in agriculture, industry, or in transport, and since they are also essential for defence, they have to be given the highest priority. This is now an accepted part of the Government policy and a scheme has been worked out for the establishment of an integrated pig-iron-cum-steel plant in the near future. Capital goods industries like locomotives, machine tools, textile machinery, heavy electrical machinery, etc. represent lines of development which must claim increasing attention immediately and in the years to come. Industries manufacturing agricultural implements, diesel engines, and pumps have a direct bearing on improvement of productivity in agriculture and there is scope for further development in this field. Among the producer goods industries, cement and fertilizers rank high in importance.

15. Since the end of the war, there has been, as mentioned earlier, considerable investment activity in the country and at the commencement of the period of the Plan, there were in the private as well as in the public sector several industrial units on which considerable capital expenditure had been incurred but which had not been completed. Early completion of such units is necessary in order that the country may get the benefit of these investments. The criteria which govern the commencement of a new industrial project must conform to the basic priorities in the Plan ; but in regard to units which have already been taken in hand and on which considerable sums of money have been spent, a measure of relaxation of these criteria is justifiable.

16. In addition, special efforts are necessary for the establishment of new plants for industries like the manufacture of sulphur from gypsum, or pulp for rayon and newsprint, or for refining ore or scrap for non-ferrous metals like zinc, copper and tin. The importance of these industries lies in the fact that they make a direct contribution towards an increase in the supply of key material, in which there is a world shortage and for which the dependence of the country on imports makes the position of the indigenous industry particularly vulnerable.

17. It will be seen that in the scheme of priorities set out above, an increase in the supply of consumer goods, has, under present conditions, to come mainly from fuller utilisation of existing capacity. This means that the setting up of new plant and machinery for these industries has in the period of the Plan a low priority. By and large, the capacity of industries producing essential goods like cotton textiles, sugar, salt, matches and soap is adequate for present requirements. The emphasis of policy in regard to them must, therefore, be on increasing the efficiency of existing plants by renovation and modernisation and by securing a better balance in the plants. It might be necessary in special cases, such as the need for developing a backward area, to permit new capacity in these industries. Where such permission is given, undertakings organised on co-operative lines would naturally have special preference. In the case of consumer goods of secondary importance such as radios, bicycles, automobiles, electric fans, etc., the problem again is one of utilising existing capacity fully, of developing the units which have already been set up or are under construction to at least the minimum economic size, and of promoting a progressive switch over of assembly plants to manufacturing.

18. It may be pointed out finally that the order of priorities stated above represents only in a general way the approach to be adopted to the problem of directing the flow of investment along various lines in the period of the Plan. In the nature of the case, no statement of priorities can be all inclusive or final. It might be necessary, for example, even in fields where existing capacity is generally held to be adequate, to permit investment on projects based on new techniques which might bring down the cost of production and stimulate domestic demand or exports. In such cases, the availability of raw materials must be carefully assessed and the sanction for investment should be preceded by a careful examination of the various related aspects of the industry in question. The licensing procedure prescribed under the provisions of the Industries (Development and Regulation) Act should ensure an impartial consideration of all the issues involved in a substantial expansion of existing units or establishment of new ones. To a great extent, each concrete proposition for investment that comes up raises a variety of considerations and is likely to secure high priority on certain grounds and relatively low priority on other grounds so that the problem always is to decide as to the relative weights to be attached to various considerations. Nevertheless, the considerations and priorities set forth above would, we consider, ensure a balanced allocation of resources as between different industries, and it is in the light of these that investment decisions should be taken.

DEVELOPMENT IN THE PUBLIC SECTOR

19. Over the five year period, the total expenditure on the projects included in the Plans for the Central Government and for the States amounts to Rs. 94 crores*. The bulk of this expenditure—about Rs. 83 crores—is in respect of projects directly under the Central Government. The projects under implementation by the State Governments are estimated to involve an expenditure of about Rs. 11 crores, of which Rs. 4·8 crores will be advanced by the Central Government as loans. The industrial plan in the public sector envisages in respect of certain projects the participation of private capital, indigenous as well as external. The estimated contribution of such private capital is about Rs. 20 crores.

20. The major new industrial project included in the Plan is the one for iron and steel, estimated to cost Rs. 80 crores in all over a period of six years from the date of commencement. The expenditure projected upto 1955-56 is Rs. 30 crores, of which Rs. 15 crores will be provided by the Government and the remainder is to be secured through participation of indigenous and external capital. The estimated capacity of this project will be about 800,000 tons of pig iron, while the steel capacity (in regard to which a firm decision will be taken later) will be a minimum of 350,000 tons, with further additions if necessary in the light of the availability of pig iron supplies from the expanded capacity in the private sector in the next few years. By 1955-56, this project, it is expected, will be producing about 350,000 tons of pig iron. The completion of this project by 1958 as well as the projects for expansion in the private sector will raise the availability of pig iron and steel from domestic sources by about 100 per cent. The Sindri plant as completed in October 1951 is capable of producing 350,000 tons of ammonium sulphate a year, and it is hoped that the corresponding monthly rate of output will be attained shortly. Another project, at present under consideration, is the expansion of the Sindri factory for the production of urea and ammonium nitrate. The all-steel coach factory which is a part of the plan for railways is expected to cost Rs. 4 crores and to produce 350 units per annum by 1957 on single shift operation as against 50 units by 1955-56.

21. The Plan provides for the completion within the five-year period of all the industrial projects in hand in the public sector ; in fact, most of these projects will be completed by 1953-54. The Chittaranjan Locomotive Factory, the total cost of which on completion will approximate to Rs. 15.0 crores (cost within the Plan period Rs. 4.73 crores) has already commenced manufacturing some of the necessary components and it is expected that by 1957 the factory will be able to produce 120 locomotives a year without having to depend

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*This is exclusive of the finance that might be allotted for industries out of the lumpsum provision of Rs. 50 crores for basic industries and transport referred to in Chapter IV. In the last years of the period of the Plan, it is proposed to provide for a project for the manufacture of heavy electrical plant and equipment out of the lumpsum provision. This figure of Rs. 94 crores differs from the estimates of expenditure on industry in the public sector given in Chapter IV, since it has been prepared on a different basis and certain items, e.g., expenditure on small scale and cottage industries, and finance for the establishment of Industrial Finance Corporations and trading estates, has not been included.

on imported components. This together with the output of 50 locomotives at TELCO will more or less meet the normal annual requirements of the railways. Work on the construction of the machine tool factory at Jalahalli in Mysore State has already commenced. The factory is estimated to cost Rs. 9.78 crores, and by 1955-56 it will produce 1,600 machine tools of the value of over Rs. 4 crores per annum. This factory will specialise in the production of high precision machine tools and will thus provide the basis for the subsequent expansion of heavy as well as light engineering industries. The provision of over Rs. 14 crores for ship-building includes the expenditure for the acquisition of the Vishakhapatnam Yard and its development besides the loans and subsidy to be given to the shipping companies for purchase of ships built in the Yard. The Plan provides for the manufacture of engines and boilers in the workshop at the Yard and also for expansion of berths for the building of ships so as to enable the Hindustan Shipyard Limited to bring down the cost of ships constructed to the level of those built in the U.K. The operation of the Yard will enable coastal shipping in India to meet the bulk of its replacement requirements.

22. Details regarding expenditure and additional capacity for the projects in the public sector are given in appendix I. It will be seen that most of the projects in this sector relate to the manufacture of capital goods or of intermediate products which are of vital importance not only from the point of view of immediate needs but also in terms of future economic development. Their completion will correct to some extent the present lopsidedness of the industrial structure. The penicillin and D.D. T. factories which do not fall in the category mentioned above have a special importance at this juncture from the point of view of improvement in public health. Among the projects of the State Governments, mention must be made of the Madhya Pradesh newsprint project and the expansion of the Mysore Iron and Steel Works. The former will produce about one-third of the country's requirement of newsprint, while the latter introduces for the first time the technique of electric smelting of iron ores.

23. The increasing participation of the Government in industrial development raises the question of the appropriate organisation for enterprises in the public sector. The criteria of successful operation for private or public enterprises are basically the same; the public must get the service of requisite quality at minimum cost, and the interests of the worker and the shareholder or the tax payer must be adequately safeguarded. Indeed, the standards of performance expected of public enterprises have to be more rigorous. It is, therefore, of the highest importance that industrial units in the public sector should be so organised as to secure the advantages of flexibility in operation generally characteristic of private enterprise with technical efficiency and responsiveness to public need, short-term as well as long-term, which form the *raison d'être* of government initiative and management in this field.

24. The principal questions which arise in this connection and our approach to them have been indicated in an earlier chapter. The drawbacks of departmental management of public enterprises are well known. Successful conduct of such enterprises requires a great

deal of initiative and the power to take quick decisions on the part of the executives in charge, and these can hardly be secured if the enterprise is directly under a government department. On the other hand, the extent of autonomy which can be insisted upon for such enterprises at the present stage is a matter on which a definite judgment cannot be hazarded except in the light of further experience. Several of the industrial undertakings directly under the Central Government have already been organised as joint stock companies with boards of directors vested with powers of management in the same manner as in any undertaking in the private sector. Recent enquiries into the working of industrial enterprises in some of the States reinforce the desirability of organising these enterprises as entities independent of day-to-day governmental control. We recommend, therefore, that industrial undertakings under the State Governments should also be organised as joint stock companies and operated on business lines with the internal management entirely under the control of the board of directors. The main principle to be followed is that such enterprises should not be subject to governmental control in their day-to-day administration but should, nevertheless, be accountable to the public which is their ultimate owner as well as beneficiary. What organisational structure and administrative procedures will answer these requirements best has to be determined in the light of experience. For the immediate present, the problem is to see that the right conventions in these matters are evolved. To a great extent, this is a matter of securing the right personnel for the boards of directors, the top executives and the technicians.

Developments in the Private Sector

25. While the emphasis of industrial expansion in the public sector during this five-year period is on initiating and promoting investment in certain basic lines and on completing the projects in hand, the initiative and responsibility for securing the necessary expansion over the bulk of the field of industry rest with private enterprise. The expansion programme in the private sector is set out in appendix II. For convenience of reference, we give a table summarising the more important expansion programmes in this section :—

Expansion Programme in Certain Major Lines in the Private Sector

	Unit	1950-51		1955-56	
		Rated Capacity	Production	Rated Capacity	Production
(1) Agricultural Machinery :—					
(*a*) Pumps, power-driven.	Numbers	33,460	34,310	69,400	80,000 to 85,000
(*b*) Diesel engines	Numbers	6,320	5,540	39,725	50,000
(2) Aluminium . . .	Tons	4,000	3,677	20,000	12,000
(3) Automobiles (manufacturing only).	Numbers	30,000	4,077	30,000	30,000

	Unit	1950-51		1955-56	
		Rated Capacity	Production	Rated Capacity	Production
(4) Bicycles	Numbers '000	120	99	530	530
(5) Cement	Tons '000	3,194	2,692	5,016	4,550
(6) Electric Transformers	KVA '000	370	179	485	450
(7) Fertilizer :					
(*i*) Ammonium sulphate	Tons	78,670	46,528	131,270	120,000
(*ii*) Superphosphate	Tons	123,460	55,089	192,855	164,000
(8) Glass Industry :					
Sheet glass	Tons	11,700	5,850	52,200	26,000
(9) Heavy Chemicals :					
(*i*) Caustic soda	Tons '000	19	11	37	33
(*ii*) Soda ash	Tons '000	54	45	86	78
(*iii*) Sulphuric acid	Tons '000	150	99	213	192
(10) Iron and Steel :					
(*i*) Pig iron	Tons '000	1,850	1,572	2,700	1,950
(*ii*) Steel (main producers)	Tons '000	975	976	1,550	1,280
(11) Paper and Board	Tons '000	137	114	198	188
(12) Petroleum Refining :					
(*i*) Liquid petroleum products	Gals. Million	N. A.	N. A.	N. A.	403
(*ii*) Bitumen	Tons	N. A.	N. A.	N. A.	37,500
(13) Power Alcohol	Gals. Million	13	5	21	18
(14) Locomotives	Numbers	...	...	50	50
(15) Rayon :					
(*i*) Rayon filament	Lbs. Million	4	...	18	18
(*ii*) Staple fibre	Bales '000	...	...	28	28

N.A.-Not available.

26. The total capital investment necessary for industrial expansion in the private sector is estimated at Rs. 233 crores*. Some 80 per cent. of this investment would be in respect of capital goods and producer goods industries. The major ones among those are : iron and steel, which is estimated to take up about Rs. 43 crores ; petroleum refineries, which will involve an expenditure of Rs. 64 crores ; cement, estimated to cost Rs. 15·4 crores ; aluminium, expected to take up Rs. 9 crores ; fertilizers, heavy chemicals and power alcohol, estimated to cost about Rs. 12 crores. Additional electric power generation in the private sector will involve an expenditure of Rs. 16 crores in the five year period. In the consumer goods industries, although the emphasis is mainly on achieving increases in production through fuller utilisation of capacity already established, considerable investment is envisaged in certain new

* This is exclusive of the estimated expenditure of Rs. 150 crores on replacement and modernisation.

lines such as rayon, paper and drugs and pharmaceuticals. In the programme for the textile industry, moderate expansion of capacity for yarn, both cotton and woollen, is included. The development programme for vegetable oils relates mainly to the establishment of solvent extraction plants and the crushing of cotton seed.

27. In the formulation and assessment of the programmes in the private sector, it is necessary to keep in mind the fact that in an economy which is not completely centralised, government can influence but not determine the actual course of investment. Nevertheless, the programmes of development as now presented are in the nature of best judgments as to what is feasible and desirable. The Commission has worked out these programmes in close consultation with representatives of the industries concerned and of the Central Ministries as also with independent experts and technicians, and has tried to assess carefully the need and scope for expansion in various fields in conformity with the order of priorities set out in earlier paragraphs. The results of this detailed examination which covers 42 organised industries are being published separately in a special volume devoted to this subject. The field of industry covers a wide variety of undertakings with large differences in financial resources, organisational set-up, scale of operations and background of experience. In many cases, the data necessary for arriving at an appropriate judgment of needs and possibilities are not satisfactory, and in some cases, the full facts regarding even the present position of the industry cannot easily be ascertained. Nevertheless, it has been possible in that volume to survey briefly the growth and present position of the major industries in the country and to work out broadly the lines along which expansions in these may be expected to take place in the five year period. The industries thus studied cover between them about 80 per cent. of the investment in the large and medium scale industries in the country. The studies brought together in that volume may have certain lacunae but it is hoped that those will be made good in the near future. In this connection we may point out that with the coming into force of the registration and licensing procedures laid down under the Industries (Development & Regulation) Act, a mass of valuable information pertaining to scheduled industries will become available and it is necessary that arrangements be made for systematic and expeditious analysis of the same.

28. We should like in this connection to mention the limitations of the estimates regarding annual rated capacity and of the level of demand presented in the volume outlining the programmes of development in the 42 industries studied. Rated capacity is a complex technical concept which should take into account the design of the plant, the number of shifts per day in the case of plants adopting batch or discontinuous processes and the number of working days per annum. Rated capacity has also to take into account the balance between the different sections in a given unit, the age of the plant and its condition. There have been no expert technical surveys of rated capacity in various lines so that estimates of the divergence between rated capacity and actual production have to be used with caution. In view of the importance of a more precise assessment of the existing position and future possibilities in this regard, it is desirable to initiate surveys of rated capacity through competent and unbiased personnel. The limitations in regard to the estimates of demand arise from the difficulty of assessing with reasonable certainty the requirements of consumption in various lines, particularly where there

is uncertainty about the availability of competing commodities. Estimates of demand over a period of years can only be approximations stating broadly the requirements that might be expected to develop on the assumption that relative prices do not change violently. It is also to be borne in mind that given the requirements of consumption for a particular product, the extent to which it will be met from imports can be indicated only roughly. Estimates of current and future consumption have been taken wherever possible from the reports of the Tariff Board, and official publications have been relied upon for estimating imports. In several cases, however, imports of commodities like sulpha compounds, penicillin, D.D.T. and several engineering products are not shown separately in the official publications, and in some cases since figures are stated in terms of value it was difficult to get an idea of the categories and quantities imported. The demands of a planned economy will necessitate continuous improvement in the compilation of industrial statistics, and it will be necessary to ensure that regular data are available on a comprehensive basis and with the minimum time lag. Official data cannot, however, be adequate for all purposes, and certain types of data can only be compiled accurately by associations of commerce and industry in the country. Such associations play in countries like the U.K. a very useful role and it is customary for them not only to maintain such data up-to-date on the basis of information received regularly from members, but also to present from time to time a picture of the conditions prevailing in the business sector. The possibility of similar developments in this country deserves consideration by the various Chambers of Commerce and other associations of business and industry in this country.

INDUSTRIAL DEVELOPMENT, 1951—56 : RESUME

29. An examination of the pattern of investment in industries in the public and private sectors during the period of the Plan shows that about 26 per cent. of the total is to go into the metallurgical industry (iron and steel and aluminium) ; 20 per cent. into petroleum refining ; 16 per cent. into engineering industries and 8 per cent. into the manufacture of heavy chemicals, fertilizers and pharmaceuticals. Relatively smaller investments are envisaged in other industries, the textile industries (cotton, jute, rayon and wool) accounting for about 6 per cent., cement for about 5 per cent., and paper, board and newsprint for about 4 per cent. As a result of these developments, appreciable increases in the production of producer and intermediate goods would be achieved. The considerable gap between actual production and annual rated capacity in 1955-56 in certain lines that is shown in the summary table in paragraph 25 above is explained by the fact that the expansion schemes of those industries would be completed somewhat after the completion of the period of the Plan and will not make a full contribution to production during 1955-56. The expansion of the iron and steel industry extending over a period of 5-6 years will be in an intermediate stage by 1955-56 and in the case of the aluminium industry, the manufacturing programme is divided into two definite stages, *viz.*, electrolytic reduction of alumina into metal and manufacture of alumina from bauxite. The former is expected to be completed towards the end of 1955 so as to keep step with the programme for the supply of power from the Hirakud power system which will commence operations at the same time. The second phase of the aluminium expansion scheme would be

completed in the subsequent period. Until then, the manufacture of aluminium at Hirakud would be based on imported alumina. Investments in petroleum refineries will probably show full results in 1956-57 or the subsequent year. In the case of engineering industries manufacturing producer and capital goods, the Plan provides for a progressive changeover from assembling to manufacturing programmes, comprising within them the production of functional and other components of the commodities involved. The production of major producer and capital goods are expected to register increases as shown under :—

1. Heavy Chemicals (Sulphuric acid, caustic soda and soda ash)	Tons '000	156·0
2. Fertilizers (Ammonium sulphate and superphosphate)	Tons '000	528·6
3. Iron and Steel		
(*a*) Pig iron (available for foundaries)	Tons '000	310·0
(*b*) Steel	Tons '000	394·0
4. Aluminium	Tons '000	8·3
5. Cement	Tons '000	2,108·0
6. Locomotives	Numbers	150 (*plus* 50 boilers)
7. Diesel Engines	Numbers '000	44·5
8. Power-driven Pumps	Numbers '000	45·7 to 50·7
9. Carding Engines	Numbers	600
10. Spinning Ring-frames	Numbers	440
11. Plain, semi and automatic Looms	Numbers	4,100

30. In respect of consumer goods, substantial increases in production are expected in cloth, sugar, paper and paper board, soap and sheet glass. Production of cloth is scheduled to rise by *1,872* million yards, of sugar by 340,000 tons, of salt by 429,000 tons, of paper and paper board by 86,000 tons, and of sheet glass by 20,150 tons over the level of 1950-51. The output of vegetable oils, which are an important constituent of a balanced diet, is to increase by about 182,000 tons. Considerable increases in production are expected in respect of durable consumer goods like bicycles and sewing machines. Larger supplies of anti-malarials (benzene hexachloride and D.D.T.), antibiotics (penicillin, aureomycine, etc.) and other synthetic drugs (sulpha compounds, anti-T.B. drugs) from domestic sources will assist considerably the campaign against disease and the protection of health in the country. These developments in the pharmaceutical field together with the programmes for the manufacture of dyestuffs in the country which has been referred to in the Development Plan for Drugs and Pharmaceutical Industries will pave the way for the early establishment of coal-tar distillation and the synthetic organic chemicals industry.

Progress in the Achievement of Targets

31. In the course of the last 18 months there has been a general increase in industrial production as a result of: (*a*) the coming into operation of new industrial units which were under construction or in the early stages of production at the commencement of the period of the Plan, (*b*) the beneficial effects of replacements of plant and machinery carried out by some of the industrial establishments in the post-war period, (*c*) fuller utilisation of the installed capacity of some industries owing to raw materials becoming more available, (*d*) improvements

in the application of import policies and their administration, and (*e*) improvement in the transport facilities provided by the railways. A statement showing the total additional capacity and production envisaged by the end of the period of the Plan together with the achievement of some of the industries in 1951-52 is given as Appendix III. This statement shows that the increase in capacity registered in 1951-52 in the more important industries when expressed as a percentage of the total expansion envisaged was: cement 30 per cent. ; spindleage for yarn 46 per cent. ; nitrogenous fertilizers 87 per cent. ; phosphatic fertilizers 60 per cent. ; sulphuric acid 20 per cent; ; caustic soda 20 per cent. It must, however, be pointed out that in the important basic industries visualised in the Plan like iron and steel, petroleum refining, aluminium production, the investments so far made have been negligible when compared with the investments to be made in future years. As regards the actual production in different sectors, the output of yarn and cloth by mills has shown a substantial increase particularly in the last six months and at the current rate of monthly production, the production of cloth by mills might nearly touch the target recommended in the Plan, *viz.*, *4,700* million yards. On the other hand, there has been no progress in the handloom sector, which emphasises the need for concentrating attention in coming years on measures which would enable this important sector of the textile industry to achieve its production target. Increases in production have also been recorded by the sugar, power alcohol, cement, paper, rayon, plywood and some of the engineering industries. On the other hand, in the manufacture of sulphuric acid, electric cables and wires and A.C.S.R. conductors, there has been no appreciable progress owing to difficulties in procuring raw materials and their high prices. It is expected that, broadly speaking, the upward trend in production will be maintained in 1952-53 since a large number of industrial projects included in the Plan are expected to be completed and to go into production during the year. Special efforts are necessary for assisting industries manufacturing sheet glass, diesel engines, etc., which have recorded a decline in production in the six months ending September 1952, on account of accumulation of stocks in the country.

CONTROLS AND INCENTIVES FOR DEVELOPMENT

32. The fulfilment of the targets set forth above will depend, in the main, on the ability of the private sector to implement the programmes scheduled. A major factor relevant in this context is the availability of finance. The competing demands on the limited savings available in the country are so large that a major objective of policy during the period of the Plan must be to canalise the available capital into lines which have been accorded high priority. It is necessary for this purpose to control capital issues as also to regulate the uses to which the accumulated funds with industry are put. Control over capital issues has been in operation for several years, but it has played so far a somewhat negative role. The Plan now provides a scheme of priorities and a set of programmes which will make it possible to operate this control with a clearer perspective. With the enactment of the Industries (Development and Regulation) Act the establishment of new industrial units as well as the substantial additions to existing ones will require Government's permission. It will thus be possible to regulate the investment of available capital whether it flows through new capital issues or is found out of reserve funds. However, while a system of controls is effective for preventing what might be considered under given conditions undesirable or less desirable uses of the resources available, by itself it might not ensure the flow of capital into more preferred lines. To secure this result,

a system of specific incentives might become necessary. For instance, in the case of projects involving heavy capital investment and the use of new techniques, it might be desirable to extend, after preliminary examination by the Tariff Commission, an advance assurance of protection. For the development of industries consuming minerals or of industries based on forest produce, long-term leases might be granted. Certain new industries might require the supply of power at concessional rates and others might need special Government assistance for securing the technical know-how through international organisations. Capital goods and certain raw materials might be allowed to be imported duty free or at concessional rates. In other words, there are various fiscal and other incentives which can be given by the Government for promoting industrial development along particular lines and these have to be used with judgment according to the requirements of each case.

Financial Requirements and Sources

33. The total investment necessary for financing the expansion plan in the public and the private sectors is estimated at Rs. 327 crores, Rs. 94 crores for the public sector and Rs. 233 crores for the private sector. In addition, the expenditure on replacement of plant and machinery and modernisation in the various industries which have a large backlog of arrears of depreciation to make up may amount to about Rs. 150 crores* during the five year period. The aggregate requirements by way of finance for fixed capital thus work out at Rs. 477 crores. The industries would also require over the period of the Plan a considerable sum by way of working capital and for covering current depreciation. Rough estimates of the orders of magnitude involved and the sources of finance are given below :—

Estimated Requirements and Sources of Finance of Industries, 1951-56

	Rs. crores		Rs. crores
(*i*) Investment in the public sector	94	(*i*) Resources of the public sector invested directly.	74
(*ii*) Investment in the private sector on expansion, modernisation and replacement	383	(*ii*) Foreign investment	100
(*iii*) Investment in working capital	150	(*iii*) Resources of domestic private industry	533
(*iv*) Current depreciation expenditure not covered by normal income-tax allowances.	80	(*a*) Savings of corporate enterprises in the industrial sector	200†
		(*b*) New issues	90
		(*c*) Assistance from the public sector	5
		(*d*) Industrial Finance Corporations.	20
		(*e*) Refunds of Excess Profits Tax deposits	60
		(*f*) Banks and other sources of short-term finance	158
TOTAL	707	TOTAL	707

*This is only a rough estimate based on certain preliminary studies undertaken in the Commission. So far as we are aware, no systemtic enquiry has been undertaken so far in regard to the needs of the industry for replacement and modernisation. Only in regard to the Indian Textile Industry, the ques ion of replacement and modernisation has been examined by the Working Party for the Cotton Textile Industry. In view of the limitation of resources and the high cost of machinery and capital goods, it might not be possible within the period of the Plan to make up all the arrears of replacement and to carry through modernisation to the full extent.

†Excludes provision for current depreciation covered by normal income-tax allowances.

34. The overall requirements for finance, it will be seen, thus amount to about Rs. 707 crores. The investment in the public sector *i.e.*, Rs. 94 crores will be met out of its own resources supplemented by a measure of foreign investment and domestic private resources. The estimated foreign investment in industries is placed tentatively at Rs. 100 crores. In the private sector, the profits of corporate enterprises engaged in industries assessed to income-tax in 1950-51 were about Rs. 98 crores. Of this, after allowing for tax and dividend payments, about Rs. 34 crores is estimated to have been ploughed back. With the greater availabilities of raw materials and the higher level of production envisaged in the Plan, the undistributed profits of corporate enterprises are likely to go up. For the five year period, these savings have been estimated at Rs. 200 crores. Agreed price increases in selected lines and restraint in dividend policies are essential elements in this programme of financing. The savings of corporate enterprises will be supplemented by new issues of the order of Rs. 90 crores, loans from the Government and from Industrial Finance Corporations to the extent of about Rs. 25 crores, and refunds of excess profits tax deposits of the order of Rs. 60 crores.

35. According to the Census of Manufactures, the working capital employed in 29 groups of industries in 1949-50 was about Rs. 280 crores Making allowance for the industries not covered by the Census, the total working capital employed in industries is likely to have been of the order of Rs. 370 crores. Roughly, 40 per cent. of this was financed by scheduled bank advances. In the period of the Plan, the working capital requirements may be assumed to go up in about the same proportion as output. On this basis, additional working capital requirements by the end of the Plan have been roughly placed at Rs. 150 crores per annum. These may be expected to be financed largely from banks and other sources such as private deposits on which industry has been relying.

36. The above estimates, it must be emphasized, are in the nature of approximations for illustrating in broad outline the pattern of finance we visualise in the industrial sector. Within the larger framework of increases in national income and savings visualised in the Plan, the targets indicated by these estimates are capable of achievement. In practice, the availability of finance from time to time as well as the precise amounts required for items like working capital is subject to a variety of influences like trends in foreign trade, the mobility of funds within the money markets, the degree of activity in the speculative markets, and other factors which affect relative prices and the flow of funds. The adjustments necessary on this account are part of the wider problem of financial policy and management.

Foreign Capital

37. In securing rapid industrial development under present conditions, foreign capital has an important part to play. A free flow of foreign capital should be welcome because it will ensure the supply of capital goods and of technical know-how The Government's policy in this regard gives the following assurances to foreign capital :—

(*a*) there will be no discrimination between foreign and Indian undertakings in the application of general industrial policy,

(*b*) reasonable facilities will be given for the remittance of profits and repatriation of capital, consistently with the foreign exchange position of the country, and

(*c*) in the event of nationalisation fair and equitable compensation would be paid.

38. The availability of external capital is at present limited by the heavy demand of resources for domestic investment in surplus countries. There is also a tendency for investible funds to flow into certain limited regions and into extractive industries rather than into industries producing goods for local consumption. It has been estimated, for instance, that of the total flow of private capital from the United States in 1947-49 about 78 per cent. went to underdeveloped countries but 90 per cent. of this was directed to investment in extractive industries working for export to the advanced industrial countries. The rate of return to capital in some of the industrially advanced countries is higher than that obtainable in India. In view of all these considerations, it is of the highest importance to ensure to the foreign investor the prospects of a fairly good return and the certainty of fair and equitable treatment. The conditions which should govern the investment of foreign capital in the country were stated in the Draft Outline Report and we should like to reiterate them here. (In view of the fact that the investment of foreign capital necessitates the utilisation of indigenous resources and also that the best use of foreign capital is as a catalytic agent for drawing forth larger resources for domestic investment, it is desirable that such investment should be channelled into fields of high priority. (The broad principle to be followed is that foreign investment should be permitted in spheres where new lines of production are to be developed or where special types of experience and technical skill are required or where the volume of domestic production is small in relation to demand and there is no reasonable expectation that the indigenous industry can expand at a sufficiently rapid pace.) The system of joint enterprises under which a number of foreign concerns have established new industries in the country in collaboration with Indian industrialists appears to be suitable for securing the employment of equity capital. Agreements for such joint participation between foreign and Indian concerns should be subject to the approval of the Government. The share of national capital in joint enterprises, the facilities for the training of Indians, the disclosure of patented processes to Indian associates, etc., are matters which have to be decided with due regard to the facts of each particular case.

39. The flow of equity capital from abroad has great advantages but it will also be necessary at the same time to obtain fixed interest capital through official or quasi-official institutions such as the International Bank for Reconstruction and Development and the Export-Import Bank in the United States. The International Bank was recently invited to consider the financing of specific industrial schemes of high priority requiring a large amount of foreign exchange for purchasing machinery and equipment, and it is to be hoped that suitable assistance from the Bank will be forthcoming.

Additional Demands for Raw Materials, Fuel and Power

40. *Agricultural raw materials*—The Plan of industrial development will create additional demands for raw materials. For example, the consumption of cotton in the textile industry would increase from 3·5 million bales to 4·9 million bales ; of jute from 4·45 million bales

to 7 million bales ; of oilseeds other than cotton seed (expressed as kernel) from about 3·1 million tons to about 3·37 million tons ; of sugarcane from about 11·4 million tons to 15·5 million tons. Expansion of production of paper and newsprint would increase the consumption of cellulosic raw materials from forests by about 80 per cent. Similarly, the production of matches and plywood would raise the requirements of timber in these industries by 21 per cent. and 79·5 per cent. respectively. With the exception of cotton and jute, the demand for which would continue to be met partly by imports, despite the expansion of their production during the period of the Plan, other raw materials would be made available from domestic sources of supply. The plans for the timber industries also visualise the exploitation of forests in the Andaman Islands.

41. *Minerals*—The principal minerals whose consumption is expected to increase as a result of industrial expansion are : limestone, gypsum, iron ore, glass sand, china clay, ilmenite, monozite sands, rock phosphate, sulphur and crude petroleum. By 1955-56, the consumption of the principal minerals is estimated to register the following order of increases : iron ore 50 per cent.; limestone 67 per cent.; gypsum 797 per cent.; sulphur (imported) 93 per cent.; rock phosphate (imported) 209 per cent.; glass and other kinds of sand 70 per cent.; and bauxite 130 per cent. Consumption of crude petroleum will rise by 1·7 million tons.

42. *By-products and waste products*—Trends of industrialisation in the advanced countries have shown that there is considerable scope for the realisation of lower costs in industry through diversification of production and utilisation of by-products and waste products. Ordinarily this phase in industrial development is reached in a country's economic progress after a certain quantum of industrialisation is achieved as a result of which by-products and waste products are thrown out in industrial operations. With the perfection of newer processes and techniques, outlets have been found for converting waste into wealth. In the industrial plan will be found proposals which make a beginning with measures for utilisation of such resources, the most important of which are :

(1) increased production of power alcohol from molasses,

(2) production of calcium lactate from molasses,

(3) utilisation of calcium carbonate sludge from the Sindri fertilizer factory and the blast furnace slags of the iron industry for the manufacture of cement,

(4) increased utilisation of bagasse in board making and for paper manufacture from mixtures of bagasse pulp with other types of pulps,

(5) solvent extraction of oil cakes for recovery of residual oils present in them,

(6) increased utilisation of spent lyes from soap factories for the manufacture of glycerine, and

(7) recovery of sulphur dioxide from waste gasses at the Indian Copper Corporation, Ghatsila.

43. *Fuel (coal)*—The consumption of coal in the country was of the order of 30 million tons in 1949 and 1950, and industries accounted for about 10 million tons out of this total. By 1955-56, additional consumption in the industrial sector is expected to be of the order of 4 million tons on the basis of production targets. Coal has not hitherto been used in this country as a raw material for chemical industries, an outlet which has expanded considerably in countries where the Haber-Bosch process for ammonia synthesis, hydrogenation of coal for producing synthetic petrol and manufacture of synthetic methanol have been extensively developed. The Sindri fertilizer factory will be the first to make use of coal as a raw material of chemical industry in the country. The estimated increases (in percentages) in consumption of coal over the 1950-51 level in some of the important industries are shown below :—

Iron and steel	20 to 25 per cent.
Cement	80 per cent.
Heavy chemicals and fertilizers . .	450 per cent.
Paper	100 per cent.

44. *Electric power*—Electric power would also assist in industrial development during the period of the Plan. With the implementation of the industrial programme, the consumption of electricity would increase from an estimated figure of about 4,000 million kW-hr in 1950 to about 6,500 million kW-hr in 1955-56. The more important projects which would be consumers of power in considerable bulk are as under :—

Additional Power Requirements of Major Industrial Projects by 1955-56

	kW
(1) Mysore Iron & Steel Works, Bhadravati . . .	50,000
(2) Aluminium smelter at Hirakud	25,000
(3) Scob-Iisco expansion, Burnpur, Hirapur . . .	35,000
(4) Sindri Fertilizer Factory, Sindri	35,000
(5) Petroleum refineries	13,500
(6) Rayon factories	10,000
(7) New iron and steel project	10,000

45. The successful implementation of the industrial programme will depend, to a great extent, on the adoption of a liberal policy by the State Governments in regard to lease of sources of supply of raw materials, such as, forests for bamboo, sabai grass, etc., and mineral deposits such as iron ore, limestone, manganese ore, etc. As regards timber for plywood, match and other industries, it is necessary to have a proper procedure of negotiated rates instead of the auction system as at present, if these industries are to carry out their plans for additional output. Similarly, industries consuming large quantities of power involve heavy financial investments for their development and unless the authorities in charge of power supply provide reasonable and firm rates and long range contracts for the supply of power, it would be difficult to facilitate the flow of investment into these industries. Timely decisions on these matters as well as the completion of power projects according to schedule are necessary for facilitating the programme of important industries consuming large power.

RESEARCH INTO DEVELOPMENT OF NEW PROCESSES

46. Development of industries through utilisation of local resources has to be planned on a long term basis. During the period of the Plan, attention has been concentrated on achieving industrial expansion by using well-established manufacturing processes although they might involve an increasing dependence on imported raw materials, primary as well as manufactured ; for instance, expansion of sulphuric acid industry would increase dependence on external supplies of sulphur. For facilitating industrial development by an increasing utilisation of domestic raw materials and by-products, it is necessary to have investigation and research into :

(*a*) Processes for the production of substitute materials which can replace products whose manufacture is based on either imported materials or materials in short supply within the country. Investigations on the manufacture of dicalcium phosphate, kotka phosphate, and nitrophosphate in the field of fertilizers are cases in point. In this connection, research has also to be undertaken into various aspects of utilisation of these alternative materials such as field experiments on the efficacy of such fertilizers under different soil conditions.

(*b*) Processes for production of the same material by using alternative raw materials and processes. Research investigations have been suggested into the possibility of production of caustic soda and sulphuric acid from sodium sulphate ; of sulphur from magnesium sulphate and by bacterial processes ; of paper pulp and newsprint from bagasse.

47. Research has played a valuable part in the United States and Germany in the field of substitutes and synthetics, and it should be possible so to direct industrial development that the economy will increasingly draw upon domestic raw materials through the establishment of industries based on new techniques and processes.

MEASURES FOR INCREASING INDUSTRIAL PRODUCTIVITY

48. In planning for industrial develoment, it is necessary to emphasise the need for a continuous improvement in standards of productivity, that is, for securing the maximum of output for a given amount of resources. Productivity is a function of several variables such as the size of the plant, the quality of the raw material used, the efficiency of the technical processes employed, the quality of the labour force and the efficiency of the management in the matter of co-ordinating to the best advantage the various factors of production utilised. As productivity improves, it becomes possible for the country with the amount of resources at its disposal to step up production continuously and thereby to secure an improvement in living standards. This is the very essence of technical progress. Since productivity is the resultant of all the factors which co-operate in production, it is not possible to allocate to each of these its specific share of responsibility for any gain or loss in productivity that might be observed. The customary measure of productivity is the amount of total production divided by the number of workers employed and judged in terms of this measure, industrial productivity in India has gone down substantially since 1939—by about 20 to 30 per cent.—in certain lines. This means that

the cost of production per unit in terms of real resources has increased. The strain on machinery and equipment during the war, the irregular supplies as well as inferior and non-uniform quality of raw materials, the setting up of a number of inefficient units under pressure of war time demands, and a measure of deterioration in the standards of management and of discipline among the workers—all these have contributed to this result. The subject of industrial productivity has received considerable attention in industrially advanced countries in recent times and it is desirable that productivity studies are undertaken in India along similar lines. The Development Councils to be established under the Industries (Development and Regulation) Act are expected to examine this problem and to recommend measures for increasing productivity in the industries within their purview. Simultaneously, efforts should be made to promote standardisation of raw materials, producer goods and finished goods, so as to secure for manufacturers as well as for consumers a guarantee of quality in terms of nationally accepted standards. A beginning in this direction has been made by the Indian Standards Institution in co-operation with industry and independent technical experts. The techniques of quality control designed to bring about a reduction in the consumption of materials and an increase in operational efficiency should also be widely applied in the industrial field. Finally, in this context, we should stress the need for industrial and scientific research. The Government has a part to play in this field and it is satisfactory that the activities of the Council of Scientific and Industrial Research have been expanding steadily to cover a wide field. A great deal must, however, depend on the interest and initiative which private industry shows in organising and promoting industrial research, not only from the point of view of increasing efficiency and reducing costs in particular lines but in the interest of overall industrial advance.

Location of Industries

49. Industrial development in India has so far been on an unplanned basis and it has been concentrated in a few select areas. Although there has been a trend towards wide dispersion of some industries like cotton textiles and cement, industrial development in some parts of the country has lagged behind seriously. The excessive concentration of industries brings in its train certain economic and social disadvantages and a wider diffusion of industry is desirable from this larger point of view. Further, if industrial development in the country is to proceed rapidly and in a balanced manner, increasingly greater attention will have to be paid to the development of those States and regions which have so far remained backward. Under the Industries (Development and Regulation) Act, the Government has powers to regulate locations. The extent to which the pattern of industrial location in the country can be changed within a short period is undoubtedly limited. For any industrial undertaking to operate profitably, it must have easy access to raw materials, to labour, to power and to markets. The tendency for industries to concentrate around certain areas where industrial development has already taken place is explained by the availability in those areas of a large number of "external" economies on account of the prior development of ancillary services and facilities like banking, transport and communications. It is difficult, therefore, in the initial stages to induce private industry to choose a new location where such facilities are inadequate. A

considerable proportion of the industrial development envisaged in this five year period is by way of expansions of existing industrial units. The question of the location of the new iron and steel plant is at present under consideration. The generation of electric power by the major multipurpose projects envisaged under the Plan will open out large possibilities of industrial development in Punjab, Bihar and Orissa. There are large potentialities of industrial development in several other States, and it is desirable in order to secure a balanced regional development in the country, to give increasing preference to such areas in the matter of location of new industrial undertakings.

INDUSTRIAL MANAGEMENT

50. For ensuring the industrial development of the country on sound lines, it is necessary, in addition to the various measures suggested in the course of this chapter, to make certain improvements in the present system of industrial management. A majority of the industries in the private sector are, at the present time, operated and managed through managing agents who are responsible for a large measure of the industrial development that has so far been achieved in the country. Though the managing agency system had certain advantages in the early days of industrial development, it has been subjected to severe criticism in recent years on account of widespread abuses having come to light in matters such as the purchase of raw materials, sale of finished products and inter-locking of financial transactions. Also a number of managing agency firms have failed to make improvements in their administrative set-up, factory management, purchases and sales organisation, system of accounting, etc.

51. The system is one of the matters which has received consideration from the Company Law Committee. They think that it can still play a useful role in present circumstances provided that measures are adopted to eradicate the evils mentioned above. They have made various recommendations in this regard as well as regarding other matters affecting the revision of the India Companies Act. These recommendations are at present under Government's consideration, but we think that they should be generally acceptable. Industrial management in a planned economy has to satisfy more rigorous steps than under conditions of unregulated private enterprise. In the last analysis, the responsibility of management is not merely to the shareholders but also to the public at large. It seems desirable that the Central Government should set up at once an agency for ensuring a better administration of the company law as well as for the discharge of other related functions. The question whether this agency should be a statutory body might be considered after it has functioned for some time. It is hoped that with the reform in the company law suggested by the Committee and with the establishment of the agency mentioned above, industrial management will conform more and more to the standards of a profession or a service, playing its legitimate part in the fostering of industrial development.

APPENDIX

Industrial Projects in

Projects	Investment up to 1st April 1951 (Rs. lakhs)	Investment during 1951-56 1951-52 (Rs. lakhs)	1952-53 (Rs. lakhs)	1951-56 (Total for 5 years) (Rs. lakhs)	Year of completion of the project	New or additional capacity (per annum) by 1955-56
I. *Central Government*						
1. Iron & Steel Project	...	...	50·0	30,00·0	1957-58	350,000 tons of pig iron by 1955-56.
2. Shipbuilding . .	1,50·0*	2,31·6	2,82·0	14,08·0	1956-57	50,000 DWT.
3. Machine Tool Factory	14·2	98·0	1,50·0	9,63·8	1953-54	1,600 units.
4. Sindri Fertiliser Factory.	18,41·2	4,35·0	3,00·0	9,03·0	Oct. 1951	350,000 tons of ammonium sulphate.
5. Chittaranjan Locomotive Factory.	10,20·0	2,82·0	1,91·0	4,73·0	Manufacture has started.	100 locomotives.
6. Railway Coach Factory.	...	6·5	1,20·0	4,00·0	1955	50 units.
7. Penicillin Factory	4·4	17·7	60·0	2,06 0**	1954	4·8 million mega units.
8. National Instruments Factory.	4·0	14·5	25·0	1,82·0	Production has started.	Additional Rs. 64·4 lakhs worth of instruments.
9. Indian Telephone Intries.	1,20·0	65·0	33·0	1,30·0	Assembly has started	Rs. 2,00 lakhs worth of telephones and other articles.
10. Hindustan Cables Ltd.	0·3	23·1	70·0	1,29·7	1953-54	Rs. 1,00 lakhs worth of cables.
11. Mandi Salt Works .	...	...	10·0	1,00·0	1954	61,000 tons of salt.
12. Rare Earth Factory .	26·0†	N.A.	N.A.	54·0	June 1952	800 tons of rare earth compounds and 202 tons of thorium compounds in terms of thorium nitrate.
13. D.D.T. Factory .	...	...	5·0	39·1‡	1954	700 tons.
14. Existing Salt Works	3·7	4·3	8·0	50·0	1955-56	About 368,000 tons of salt.
15. Housing Factory .	93·7	9·8	2·0	11·8	1952-53	...
16. Other Projects§ .	N.A.	N.A.	N.A.	2,02·1	1955-56	...
TOTAL .	32,77·5	11,87·5	13,06·0	82,53·1		

* Represents the investment by the Central Government only.

**Including Rs. 57·0 lakhs from WHO and UNICEF

† Investment up to the end of 1951.

‡ Including 350,000 U.S. dollars from WHO and UNICEF.

§ Including, *inter alia*, Nasik Printing Press, Silver Refinery and New Mint (Alipore).

N.A.—Not available.

1

the Public Sector

Projects	Investment upto 1st April 1951 (Rs. lakhs)	Investment during 1951-56 1951-52 (Rs. lakhs)	1952-53 (Rs. lakhs)	1951-56 (Total for 5 years) (Rs. lakhs)	Year of completion of the project	New or additional capacity (per annum) by 1955-56
II. *State Government*						
1. Mysore Iron & Steel Works.	2,16·0	40·0	1,25·0	2,83·0	1954-55	Additional 60,000 tons of finished steel.
2. U.P. Govt. Cement Factory.	1,52·8	65·0	1,24·6	2,30·5	1953-54	200,000 tons.
3. NEPA Mills . .	2,24·9	91·4	82·0	2,00·0	1954	30,000 tons of newsprint (300 working days).
4. Sirsilk Ltd.* . .	3,81·0	65·6†	90·0†	200·0	1953-54	16·5 million yds. of art silk (330 working days).
5. Sirpur Paper Mills .	2,03·0			60·0	1953-54	Additional 8,000 tons.
6. U. P. Precision Instruments Factory.	14·1	9·8	7·3	50·2	Expansion	12,000 water meters & 300 microscopes.
7. Bihar Govt. Superphosphate Factory.	1·3	11·7	40·0	41·1	1953-54	16,500 tons of superphosphate (330 working days).
8. Other Projects .	N.A.	N.A.	N.A.	65·0‡	1955-56	..
TOTAL . .	11,93·1	2,83·5	4,68·9	11,29·8		
GRAND TOTAL .	44,70·6	14,71·0	17,74·9	93,82·9		

* Provision in the Hyderabad State Plan for this project amounts to Rs. 85.70 lakhs.

† Includes expenditure on Singarani Collieries Ltd.

‡ Including Rs. 40·0 lakhs for the DDT Factory in the Bombay State Plan.

N.A.—Not available.

APPENDIX

Expansion Programme

Industry	Unit	1950-51 Rated Capacity	1950-51 Production	1955-56 Rated Capacity	1955-56 Production	Capital Investment during 1951-56 (Rs. lakhs)
1. Agricultural Machinery :						
(*i*) Pumps (power-driven centrifugal)	Numbers	33,460	34,310	69,400	80,000 to 85,000	1,20
(*ii*) Diesel engines	„	6,320	5,540	39,725	50,000	
2. Aluminium	Tons	4,000	3,677	20,000	12,000	9,00 (1)
3. Automobile (manufacturing only) (2)	Numbers	30,000	4,077	30,000	30,000	3,00
4. Ball & Roller Bearing	Numbers '000	600	87	1,200	1,200	5,25*
5. Battery, Dry Cell	„ „	285,000	136,500	310,000	320,000	...
6. Battery, Storage	„ „	446	200	538	400	...
7. Bicycle	„ „	120	101	530	530	...
8. Cement	Tons '000	3,194	2,692(3)	5,016	4,515	15,40
9. Cotton Textile :						
(*i*) Yarn	Lbs. million	1,669	1,179	1,722	1,640	9,00
(*ii*) Cloth (mill-made)	Yds. „	4,744	3,718	4,779	4,700	
(*iii*) Cloth (hand-loom)	„ „	3,000 (4)	810	3,000	1,700	
10. Electric Cable & Wire						
A.C.S.R. Cables	Tons	2,500	1,674	5,000	5,000	...
11. Electric Fan	Numbers '000	288	194	360	320 to 350	...

*Capital investment also covers the other light engineering industries listed under Serial Nos. 5-7, 10-14, 17, 19, 31 & 34.

(1) Covers only what is expected to be spent during the period of the Plan.

(2) Based on the programme of the two existing manufacturers.

(3) The actual production includes the output of the factory in the public sector.

(4) The rated capacity of handlooms is based on the number of handlooms in existence at present and availability of yarn at the rate of 20 lbs. per month.

II

in the Private Sector

Industry	Unit	1950-51 Rated Capacity	1950-51 Production	1955-56 Rated Capacity	1955-56 Production	Capital Investment during 1951-56 (Rs. lakhs)
12. Electric Lamp :						
(*i*) G.S.L. lamps .	Numbers '000	23,000	15,000	32,000	30,000	...
(*ii*) Miniature lamps .	„ „	900	N.A.	27,500	16,000	...
13. Electric Motor	HP. '000	150	99	300	320	...
14. Electric Transformer	KVA '000	370	179	485	450	...
15. Fertiliser :						
(*i*) Ammonium sulphate	Tons	78,670	46,304	131,270	120,000	2,10
(*ii*) Super-phosphate .	Tons	123,460	55,089	192,855	164,000	
16. Glass & Glassware :						
(*i*) Sheet glass . .	Tons	11,700	5,850	52,200	26,000	2,20
(*ii*) Blownware & pressedware . .	Tons	201,550	86,000	237,800	137,500 to 142,500	
(*iii*) Bangles . .	Tons	35,000	16,000	35,000	16,000	
17. Grinding Wheel .	Tons	360	231	840	750 to 800	
18. Heavy Chemical :						
(*i*) Sulphuric acid .	Tons '000	150	99	213	192	7,30
(*ii*) Soda ash . .	Tons '000	54	45	86	78	
(*iii*) Caustic soda .	Tons '000	19	11	37	33	
19. Hurricane Lantern .	Numbers '000	4,260	3,240	4,510	6,000	
20. Iron & Steel :						
(*i*) Pig iron . .	Tons '000	1,850	1,572(5)	2,700(6)	1,950	43,00
(*ii*) Finished steel (main producers only)	Tons '000	975	976(5)	1,550(6)	1,280	

(5) Including the output of the Mysore Iron & Steel Works.

(6) The rated capacity will be achieved when the expansion projects are completed i. e., by 1957-58.

APPENDIX

Expansion Programme

Industry	Unit	1950-51 Rated Capacity	1950-51 Production	1955-56 Rated Capacity	1955-56 Production	Capital Investment during 1951-56 (Rs. lakhs)
21. Jute Manufactures .	Tons' 000	1,200	892	1,200	1,200	..
22. Machine Tool (graded) . .	Numbers	3,000	1,101(7)	3,000	3,000	20
23. Match . .	Gross Boxes '000	35,300	29,100	38,300	35,300	50
24. Paints & Varnish (organised industry only) :						
(i) Ready-mixed paint, varnish, etc. . .	Tons '000	65	29	70	60	50
(ii) Pigment (titanium di-oxide) .	Tons	...	...	1,800	1,800	
(iii) Nitrocellulose lacquers . .	Gals '000	...	...	350	300	
(iv) Aluminium paste and powder .	Tons	...	...	750	750	
25. Paper and Board :						
(i) Paper and paper board . . .	Tons '000	137	114(8)	198	188	5,35
(ii) Strawboard and other boards .	Tons '000	48	22	58	53	
26. Petroleum Refining (in terms of input of crude oil) .	Tons '000	250	...	2,000(8)	...	64,00
(i) Liquid petroleum products . .	Gals. million	N.A.	N.A.	N.A.	403(9)	
(ii) Bitumen .	Tons	N.A.	N.A.	N.A.	37,500(9)	
27. Pharmaceuticals :						
(i) Benzene hexachloride . .	Tons	...	...	500	500	3,50
(ii) Sulpha drugs .	Lbs. '000	...	...	400	400	
(iii) Para-amino salicylic acid . .	Tons	...	...	48	48	
(iv) Calcium lactate	Tons	...	...	50	50	

(7) The estimated figure relates to the calendar year 1950.

(8) The rated capacity will reach 3·45 million tons, in terms of input of crude oil, by 1956-57 when the two new refineries are expected to be in full production.

(9) Exclusive of the existing capacity.

II—*contd.*

in the Private Sector

Industry	Unit	1950-51		1955-56		Capital Investment during 1951-56 (Rs. lakhs)
		Rated Capacity	Production	Rated Capacity	Production	
28. Plywood : Tea-chest	Sq.ft. '000	138,840	44,940	180,000 to 190,000	100,000	60
29. Power Alcohol ;						
(*i*) Power alcohol .	Gals. million.	13	5	21	18	120[10]
(*ii*) Commercial spirit	Gals. million	3	N.A.	3	2	
30. Railway Rolling Stock :						
(*i*) Locomotives .	Numbers	N.A.	N.A.	50 *plus* 50 boilers	50 *plus* 50 boilers	2,50
(*ii*) Underframes .	Numbers	N.A.	N.A.	400	400	
31. Radio Receiver .	Numbers '000	77	49	380	350	..
32. Rayon (including cellulosic raw materials) :						
(*i*) Rayon filament .	Lbs. million.	4	1	18	18	15,10
(*ii*) Staple fibre .	Bales '000	...	...	28	28	
(*iii*) Cotton linter .	Lbs. million	...	...	5	5	
(*iv*) Chemical pulp .	Tons	...	...	11,500[11]	N	
33. Salt [12] . .	Tons '000	2,270	1,920	4,026	2,186	N A.
34. Sewing Machine .	Numbers	37,500	32,965	91,500	91,500	.
35. Soap (including glycerine) :						
Soap . . .	Tons '000	265	106	280	200	60
36. Sugar . .	Tons '000	1,540	1,116[13]	1,550	1,500	10

[10] Includes expenditure for creating facilities for petrol-alcohol mixture.

[11] Construction will be just completed so that the actual production is assumed to be negligible.

[12] Figures relating to the rated capacity (*i.e.*, potential production capacity) and actual production of salt in the private sector have been estimated, except for the industry's total capacity of 4 026 million tons by 1955-56 (including the capacity in the public sector) which was estimated by the Salt Experts Committee.

[13] Figure relates to the sugar season 1950-51.

N—Negligible.

N. A —Not available.

APPENDIX II—*concld.*

Expansion Programme in the Private Sector

Industry	Unit	1950-51		1955-56		Capital Investment during 1951-56 (Rs. lakhs)
		Rated Capacity	Production	Rated Capacity	Production	
37. Tanning & Footwear : Footwear . .	Million pairs	...	85·0	..	91·0	60
38. Textile Machinery :						
(*i*) Carding engines	Numbers	600	...	600	600	1,50
(*ii*) Spinning ring frames.	„	396	260	800	700	
(*iii*) Looms—plain, semi and automatic.	„	3,600	1,894	8,000	6,000	
39. Vanaspati . .	Tons '000	333	153	389	300	50
40. Vegetable Oil .	Tons '000	N.A.	1,118(14)	N.A.	1,299	60
41. Woollen Manufactures	Lbs. '000	20,150	18,000	20,150(15)	25,000	50
42. Other Industries (16) .		..		..	. .	38,00
					TOTAL	233,30

(14) The production figure for vegetable oils, excluding coconut oil, relates to the year 1949-50.

(15) Figures for rated capacity as well as production do not take into account the installation of 30,000 spindles for fine woollen yarn.

(16) Including development of power generation in the private sector estimated to cost Rs. 16,00 lakhs, and produce 176,000 K.W. by 1956.

N.A.—Not available.

APPENDIX III

Progress in the Implementation of Development Plans of Certain Major Industries

Industry	Unit	1951-56		Progress during 1951-52		Actual Production during April-September	
		Additional Capacity	Additional Production	Additional Capacity	Additional Production	1951	1952
1. Agricultural Machinery :							
(*i*) Pumps (power-driven centrifugal).	Numbers	35,940	45,687 to 50,687	9,340	11,587	19,200	12,900
(*ii*) Diesel engines . .	Numbers	33,405	44,462	3,600	1,725	3,316	1,671
2. Aluminium . . .	Tons	16,000	8,323	...	328	1,881	2,140
3. Battery, dry cell . .	Numbers millions	25	183	...	8	76·2	57·1
4. Battery, storage . .	Numbers '000	93	200	93	10	114·3	77·7
5. Bicycle	Numbers '000	410	429	...	19	42·7	96·7
6. Cement . . .	Numbers '000	2,026	2,108	596	596	1,580·3	1,727·1
7. Cotton Textile :							
(*i*) Yarn : Spindleage .	Numbers '000	350	...	159	...	...	...
or							
Capacity for yarn .	Lbs. million	53	461	24	156	658	727
(*ii*) Mill cloth : Loomage	Numbers '000	2	...	1	...		...
or							
Capacity for cloth .	Yds. million	35	982	24	408	2,086	2,364
(*iii*) Handloom Cloth . .	Yds. million	N.A.	890	N.A.	114	N A.	N.A.
8. Electric Transformer .	KVA '000	115	241	...	23	99·8	97·9
9. Fertiliser :							
(*i*) Ammonium sulphate .	Tons	402,600	403,696	350,000	29,029	21,300	98,817
(*ii*) Superphosphate .	Tons	85,895	124,911	50,395	8,690	27,700	24,184
10. Glass and Glassware :							
(*i*) Sheet glass . . .	Tons	40,500	20,100	...	(—)600	1,645	381
(*ii*) Blownware and pressed-ware.	Tons	36,250	51,400 to 56,400	6,500	23,600	41,707	40,210
11. Heavy Chemical :							
(*i*) Sulphuric acid . .	Tons '000	70	101	39	4	51·0	47·7
(*ii*) Caustic soda . .	Tons	18,400	21,625	3,850	4,520	7,100	8,314
12. Iron and Steel :							
(*i*) Pig iron . . .	Tons '000	1,757	1,261	...	166	904	874
(*ii*) Finished steel . .	Tons '000	635	394	...	55	518	526
13. Jute manufactures . .	Tons '000	...	308	...	88	438	466
14. Match	Gross boxes '000	3,000	6,200	...	2,800	14,655	15,300
15. Paper and paper board .	Tons '000	74	86	5	21	66·1	68·2
16. Plywood : Tea-chest .	Sq. ft. '000	51,200	54,100	21,500	23,200	28,890	37,658
17. Power Alcohol . .	Bulk Galls. '000	8,250	15,284	...	1,694	2,620	3,710
18. Radio Receiver . .	Numbers '000	303	301	76	26	35·6	38·2
19. Rayon : Rayon filament .	Lbs. million	18·0	21·6	3·0	6·0	2·4	3·9
20. Sewing machines . .	Numbers	54,000	58,535	...	15	23,671	24,022
21. Soap	Tons '000	15	94	7	9	38·9	40·5
22. Sugar	Tons '000	10	384	...	369	87·2	298·0

N.A.—Not available.

CHAPTER XXX

FOREIGN TRADE AND COMMERCIAL POLICY

Commercial policy in the widest sense of the term covers a variety of problems. For instance, the pros and cons of multilateralism, the principles to be applied in protecting domestic industries, the relative advantages of quotas, bilateral trade agreements, and bulk purchasing can all in one way or another be considered as coming within the purview of commercial policy. The scope of this chapter is however more limited. It is intended to bring out the likely effects of the Plan on the structure of foreign trade and the considerations that will have to be borne in mind in framing import and export programmes in the period of the Plan.

Role of Commercial Policy in Planning

2. Commercial policy thus defined has to serve the following ends in the context of planning :

(*a*) it must help to fulfil the production and consumption targets in the Plan ;

(*b*) the accent of policy throughout must be on maintaining a high level of exports ;

(*c*) the deficits in balance of payments must be kept within the foreign exchange resources at the disposal of the country in any given period ;

(*d*) the composition of exports as well as of imports must, as far as possible, fit in with the fiscal and price policies which have to be followed for the implementation of the Plan; and

(*e*) there must be, to the extent practicable, a measure of continuity in policy so that trade relations with other countries in respect of exports and imports and the plans of domestic industry and trade are not frequently disturbed.

3. Conditions of foreign trade, as is well-known, are apt to change frequently and sometimes violently. Precise year by year targets for exports and imports over the period of the Plan would therefore serve little purpose. There is also the additional factor that the timing and magnitude of external assistance which might be available cannot be precisely foreseen. The five guiding principles mentioned above will, however, in any given set of circumstances, indicate broadly the appropriate policy which has to be followed. For instance, if foreign exchange resources are limited and are barely sufficient for the imports essential for the implementation of the Plan, imports of less essential commodities will have to be restricted and measures taken to promote exports to the extent necessary. Such exports should not involve any significant diversion of resources from production in important lines. A deterioration in foreign exchange resources must preferably be met by decreased domestic outlay on consumer goods which are either imported or can be

exported without detriment, rather than by a reduction in planned investment. A great part of the revenue of the Government from import duties is derived from imports of "non-essential" goods. If these have to be restricted, alternative ways of raising the necessary resources for the public sector have to be devised. It is also possible that the commodities for which there is a ready market abroad may be those which are essential internally for the implementation of the development programme. Regulation of foreign trade aimed at cutting down imports and promoting exports will therefore have to keep these factors also in view. If, on the other hand, the foreign exchange resources of the country are supplemented from other sources, it will be necessary to ensure that the additional imports permitted are such as will most effectively support the development programme; this will no doubt mean concentrating to a great extent on imports of producer goods (including raw materials) but consumer goods (particularly foodgrains) will also be required to meet inflationary pressures generated by the programme. In periods of relatively easy foreign exchange supplies the need for export promotion will be less evident, but it will be necessary to have the long range objectives of commercial policy in view and to refrain from measures which endanger the market for the country's exports in the future.

4. These are matters in which there must necessarily be a measure of flexibility in policy. It is however necessary to adhere to the broad principles indicated above and to adapt policy to the changes in the volume, composition and direction of foreign trade anticipated in the period of the Plan. There have also been a number of changes in India's foreign trade in the last decade or so which are perhaps as relevant to obtaining a perspective of the problem as the changes that are likely to be brought out as a result of the Plan itself. The following paragraphs are therefore devoted to a general analysis of these changes so as to bring out the considerations in the light of which commercial policy will have to be framed in the period of the Plan.

Determinants of Policy: Pre-War and Post-War

5. Before the war, India was a net debtor country and had to have a surplus of a fairly large order in its trade accounts in order to meet the servicing charges on the sterling debt. This was therefore the key to its commercial policy. In the wider pattern of international balance of payments, India was among the group of countries which were net dollar earners and made over those earnings to the metropolitan countries of Europe in payment for the deficits which they had with them. It was a member of the sterling area, one of the main objectives of which was to expand trade within the area while preserving the stability of sterling as an international currency ; under the conditions that prevailed in the thirties, this meant that a certain measure of discrimination in trade was unavoidable. In so far as the discriminatory principle was implicit in arrangements like Imperial Preference, it was an important factor which also affected commercial policy.

6. By the end of the war, almost the entire external debt of the Government was repaid and balances of the order of Rs. 1600 crores had been built up in sterling. This obviated the necessity for having a surplus on trade account. The magnitude of the external reserves accumulated

during the war opened up in fact the prospect of being able to finance fairly large deficits in balance of payments. But the post-war difficulties of the United Kingdom placed a limit on the rate at which the sterling balances could be drawn upon. The distinction between soft and hard currencies, and India's added interest as a 'creditor' country in the stability of sterling, also necessitated the continuance of discriminatory practices in trade with the dollar area.

7. Since the sterling balances were largely the result of restricted consumption and investment and not a reflection of any permanent improvement in productivity in the economy the problem of balancing trade at the end of the war was in a sense more difficult than before it. The financing of the war had increased money incomes but consumption had been kept down by scarcities and price rises. In industry and transport there had been not only little net addition to capital equipment during the war but even normal depreciation requirements had to be postponed. On the conclusion of the war the economy was in a starved condition, and it was necessary to provide for imports on a large scale to make good the results of war-time austerity and depletion of capital, not to mention the needs of development.

8. Even apart from the pressure of pent-up demands, the import requirements were larger and exportable surpluses smaller at the end of the war. This was on account of the increase in population in the interval and the partition of the country which enlarged the country's deficit in food and raw materials. Changes necessitated by wartime requirements in the pattern of production also aggravated the difficulty. These changes were responsible for a sharp contraction in the exportable surpluses of staple commodities like raw cotton and raw jute. Oil-seeds and pig iron were also required in large quantities to meet increased domestic industrial needs. The decline in the exports of these commodities was to some extent counter-balanced by increased exports of primary products like spices and mica and of semi-manufactures such as vegetable oil, but the volume of exports in 1946-47 was still only about two-thirds of the prewar level.

9. Partition affected most the exports of jute, cotton, and hides. In the new set-up, large scale imports of these were essential for some of the largest established industries in India. But the commodities that could be exported to Pakistan in exchange were mainly processed materials like cotton textiles, sugar, and matches which, until Partition, were receiving some protection against foreign competition in the areas which now constitute Pakistan. Partition therefore not only resulted in increased reliance on imported raw materials but made more difficult the problem of export promotion.

Effects of the War and the Partition on Pattern of Trade

10. The changes brought about by the War and the Partition in the pattern of India's foreign trade will be evident from the following table, which shows for selected years the percentage shares in exports and imports of three main groups of commodities:

	Exports			Imports		
	Food, Drink and Tobacco	Raw Materials	Manufactured Articles	Food, Drink and Tobacco	Raw materials	Manufactured Articles
Pre-war (1938-39)	24·0	45·0	29·3	15·8	21·8	60·9
Post-war (1946-47)	19·5	31·0	48·0	33·8	19·9	44·4
Post-Partition (1948-49)	21·0	23·5	55·1	24·3	30·7	44·3

11. The increase in the exports of manufactured articles, it will be noted, is more apparent than real; it is explained mainly by the relative increase in their importance consequent on the sharp decline in the exports of raw materials. In absolute terms, the volume of exported manufactures was only about six per cent higher in 1948-49 than a decade earlier, and even this improvement was mainly on account of the increase in exports of cotton manufactures through reduced *per capita* domestic consumption. The apparent reduction in the imports of manufactured articles is also relative. It will be seen from the following indices of export and import quantities that there were significant changes in the volume of trade only in respect of raw materials and of imported food:—

	Exports			Imports		
	Food, Drink and Tobacco	Raw Materials	Manufactured Articles	Food, Drink and Tobacco	Raw Materials	Manufactured Articles
Pre-war (1938-39) .	100·0	100·0	100·0	100·0	100·0	100·0
Post-war (1947-48). .	83·7	41·7	92·5	138·6	11·9	72·0
Post-Partition (1948-49) .	95·7	30·6	106·4	155·9	142·8	105·0

12. Within the category of manufactures, there was a significant increase in imports of machinery. This was not very pronounced in the early post-war years on account of the difficult supply position abroad ; a time-lag was also inevitable between placing of orders and delivery in the case of heavy capital equipment. The process of meeting current requirements and overtaking past arrears could be said to have begun only in 1947-48. By 1949-50, the value of imported machinery had risen to about Rs. 103 crores from the pre-war level of about Rs. 19 crores but the lag in arrears to be made up was still large.

Shifts in the Composition and Direction of Trade

13. There were two further developments in this period which are significant from the point of view of commercial policy, one relating to the composition of exports and the other to the direction of trade. In 1938-39, jute manufactures, cotton manufactures and tea accounted for only about 35 per cent of the total value of India's exports. Of the rest, raw cotton, raw jute, oilseeds, hides and skins, metals and ores and raw wool contributed as much as 40 per cent. In the following decade this distribution became much more uneven. By 1948-49, the share of jute and cotton manufactures and tea had risen to over 56 per cent, while the contribution of the latter group fell to less than 15 per cent. The increased dependence on a few commodities not only introduced an element of instability in export prospects but was bound to weaken the country's position in regard to larger questions of policy.

14. Secondly, before the war, over half of India's foreign trade was with countries which now constitute the sterling area ; only about ten per cent on average was with the dollar area, while the rest was distributed between a number of countries in Europe, the Middle East and the Far East which did not fall in either of these groups. In the following ten years, the

share of the sterling area (excluding Pakistan) became somewhat smaller. Trade with Germany and Japan also declined sharply. The result, as will be evident from the table below, was to increase the share of the dollar area to about a quarter of the country's total foreign trade.

	1938-39		1948-49	
	Exports	Imports	Exports	Imports
Sterling area (excluding Pakistan) . .	53	58	48	47
Other soft and medium currency countries	18	15	20	25
Hard currency countries—				
Dollar area*	12	7	28	24
Others**	17	20	4	4
TOTAL .	100	100	100	100

15. On the side of exports there was no significant compositional change in the trade with the dollar area, except that new commodities like cashewnuts, manganese ore, and spices assured greater importance as dollar earners. But the pattern of imports changed considerably in this period, mainly on account of the greater dependence on this area for supplies of food-grains and developmental commodities. These changes are reflected in the trade between India and the United States.

(Rs. crores)

	1938-39	1948-49
Exports to the United States :		
Fruits and vegetables	1.1	4.5
Spices	...	1·3
Tea	0.5	3.8
Raw hides and skins	1·5	2.6
Jute manufactures	6.9	33·9
Metallic ores	0.2	4.1
Others	4·1	19.8
	14·3	70·0
Imports from the United States :		
Grain, pulses and flour	...	15·8
Mineral oils	0·9	10·3
Machinery	2.1	20.1
Metals	0 5	10.6
Vehicles	1·7	12.7
Others	4·6	44·7
	9·8	104·2

*Dollar area here covers the whole continent of North, Central, and South America and adjacent islands (excluding Brazil, Chile, Urugay, Peru and European possessions) together with the Philippines.

**Other hard currency countries as defined here include Belgium and its possessions, Portugal and its possessions, Germany and Japan.

THE IMPACT OF THE PLAN ON VOLUME OF FOREIGN TRADE

16. In formulating the commercial policy during the period of the Plan, these changes in the last few years in the volume, composition and direction of foreign trade have to be kept in mind. The contraction in the volume of exports, the increased dependence on imports of food and raw material, the lag in replacements of machinery and capital equipment, the excessive reliance on a few markets partly on account of insufficient diversification of exports; and the imbalance in the trade with the dollar area, will all tend to restrict in the initial stages the scope for making any radical changes in policy. To an extent the Plan itself is designed to meet some of these problems. The higher production of agricultural raw materials like jute and cotton provided for in the Plan will reduce the dependence on imports relatively to the level of domestic production of manufactured products like jute and cotton textiles, and increase the exportable surpluses of the latter. The arrears in capital expenditure accumulated during the war will also by and large, have been made up in the course of the five years. The recovery of Germany and Japan, and the possibility of developing greater trade relations with countries like Czechoslovakia and Sweden which can export capital goods, will help to diversify trade and partly correct the existing imbalance with the hard currency countries. It is also to be expected that as new lines of manufacturing industries develop in India, the trend already noticeable in recent years for exports of sewing machines, batteries, textile machinery, electric fans, bicycles, etc., to countries in South-East Asia will also be strengthened.

17. As outlined earlier, the Plan aims at meeting the rising consumption requirements of a population which will be growing at the rate of about 1¼ per cent per annum. It also envisages raising the level of investment expenditure per annum in the economy by well over 50 per cent. The higher domestic requirements which these targets imply are bound to make themselves felt in increased demand for imports as well as in reduced surpluses of consumer goods and raw materials. Similarly, while the demand for capital goods on account of arrears in depreciation may fall off, it will be more than made up by the greater requirements of new development projects.

18. There would, in other words, be two forces at work as far as foreign trade is concerned, one tending to lessen the pressure on foreign exchange and the other tending to increase it. Both effects would follow from the Plan, the first from the production targets and the second from the consumption and investment targets. To the foreign exchange implications of these factors, and the manner in which they are related to the need for supplementary external resources, reference has already been made in Chapter III

19. Any assessment of the effect of a programme of development on foreign trade must necessarily be related to the consumption, production and investment targets in the programme. As pointed out in Chapter III, we have for this purpose proceeded in the first instance on the assumption of a developmental outlay by the Government of the order of Rs. 1,700 crores (*i.e.*, an outlay which could be more or less met from the budgetary resources of the Central and the State Governments, some deficit financing, and the external assistance already received). The effect on exportable surpluses and on import requirements of the further outlay necessary in order to reach the target of Rs. 2,069 crores in the Plan is left for being

taken into account at a later stage. On this basis, it has been estimated that the volume of India's exports is likely to increase by nearly 30 per cent by 1955-56 as compared to 1948-49 and by over 10 per cent as compared to 1950-51 (which was a boom year for exports). The volume of 1955-56 will on the other hand be about 18 per cent more than in 1950-51 (when imports were on a somewhat smaller scale than usual on account of international conditions) but only 3 per cent more than in 1948-49 when the Open General Licence for imports was in full operation. The relatively smaller increase envisaged in the case of imports is a measure of the rigorous import controls on consumer goods that have been assumed in the estimates.

CHANGES IN COMPOSITION OF TRADE IN THE PLAN PERIOD

20. The increase in exports is expected to take place mainly in cotton piecegoods, jute yarns and manufactures, manganese ore, oils, coal and coke, black pepper, tobacco, coir manufactures and woollen manufactures. The estimates in respect of these are as follows :

	Recorded exports in 1948-49	Annual rate of exports by the end of the Plan
Cotton piecegoods (million yards)	341	1,000
Jute yarns and manufactures (thousand tons)	929	1,000
Manganese ore (thousand tons)	309	1,000
Oil (million gallons)	15·5	41·4
Coal and coke (thousand tons)	1,137	3,000
Black pepper (thousand cwts)	141	300
Tobacco (million lbs)	56	96
Coir manufactures (thousand cwts)	869	1,700
Woollen manufactures (million lbs)	8·3	16·0

In addition, there are a number of newly-developing lines of exports which are expected to show significant progress in this five-year period *e.g.*, sewing machines, textile machinery, electric fans, bicycles, storage batteries, small machine tools, dry cells, soap, chemicals, cement, and paper and paper boards. To encourage this diversification of exports, particularly of manufactured articles, it would be desirable to simplify and extend as far as possible the system of granting rebates of import duty on raw materials used in manufactures.

21. Exports may remain at about the same level as in 1948-49 in the case of some commodities like tea, cotton waste, mica and lac, either as a result of production remaining constant or internal requirements increasing. In a few instances, where the increases in internal demand for manufacturing purposes or for direct consumption are likely to outstrip internal availabilities in the initial stages, exports may fall lower than in 1948-49 though even here the tendency by and large would be for the exportable surpluses to fall heavily in the initial stages and then to increase as the Plan progresses.

	Recorded exports in 1948-49	Annual rate of exports by the end of the Plan
Oilseeds (thousand tons)	104·0	50·0
Artificial silk piece-goods (million yards)	24·0	10·0

To a great extent, the declines under these would also be made up by increased exports of the manufactured products or by decreased import requirements.

22. The effect of the Plan on imports is more difficult to specify commodity-wise. The volume of imports at each stage in the implementation of the Plan as well as at the end of the five years would depend to a great extent on the degree of control exercised over them, which in turn would be determined by the availability of foreign exchange. It is difficult, in particular, to forecast the precise requirements by way of food imports by the end of the Plan as they will have to be adjusted from time to time to the level of investment outlay in the country and the pressures it tends to generate. Provisionally it has been assumed that about 3 million tons of foodgrains would have to be imported every year in the period of the Plan. As indicated in an earlier chapter, shortage of foreign exchange resources seems at present likely to be a serious bottleneck if a development programme in the public sector of the order of Rs. 2,069 crores is to be implemented without supplementary external resources. In this eventuality, imports will have to be restricted to commodities with the highest priority and this is likely to have its repercussions on the economy. If, on the other hand, additional foreign exchange resources became available in the period of the Plan, it would be possible to have larger imports.

23. If producer goods are defined so as to include unprocessed and partly processed raw materials as well as manufactures and semi-manufactures used in production, they have in recent years constituted about two-third of total imports into India. The Plan will on the whole tend to reduce the dependence on imported agricultural raw materials. Imports of raw jute, in particular, are expected to fall from the level of 42 lakh bales in 1948-49 to around 9 lakh bales per annum by the end of 1955-56. But imports of processed raw materials will have to be stepped up considerably for meeting the production targets in the Plan. In spite of the development of petroleum refining and of the power alcohol industry in this period, imports of oil, for instance, may have to be maintained at a high rate upto 1955-56 when domestic production of mineral oil will help to reduce these to a considerable extent. The development of the rayon industry envisaged in the Plan would need about 15,000 tons of rayon grade pulp to be imported every year. The fertiliser industry would also require imports of rock phosphate of the order of 108,000 tons per annum by 1955-56. Petroleum refining would similarly require imports of crude petroleum to the extent of 1·7 million tons. The only significant exception is likely to be staple fibre, in whose case the expected increase in production by over 11 million lbs. would reduce considerably the dependence on imports by the end of the Plan.

24. The effect of the Plan on imports of manufactures and semi-manufactures (including intermediate products) used for production would by and large be the same as on imports of processed raw materials. Imports of locomotives for replacement purposes are likely to be completely eliminated. In a few cases where the projected expansion in domestic production is likely to exceed the increase in domestic requirements, imports may tend to fall, *e.g.*, in respect of fertilisers, aluminium, cement, and artificial silk yarn. But in all others, and particularly in the case of capital equipment, heavy durables and metals (iron and steel, copper, zinc and tin) there will be significant increases in the level of imports.

Outlook for the Future

25. The broad pattern of foreign trade that is likely to emerge as a result of the Plan is thus clear. It hardly needs stressing that if external resources are not forthcoming to supplement the normal foreign exchange earnings of the country and the agreed releases from the sterling balances, the balancing of external accounts will be placed under strain in the period of the Plan. This will inevitably have its repercussions on commercial policy and, in fact, on every aspect of the economy. If on the other hand, supplementary external resources become available, responsibility of another kind will be placed on the conduct of commercial policy. By appropriate adjustments in exports and imports, it will be the function of commercial policy to ensure the most effective utilisation of such resources without adversely affecting either the domestic industries or the country's export prospects in the future.

26. The markets for India's exports and the sources of its imports would depend to a great extent on price movements abroad as well as on the availabilities of the commodities themselves. It is clear that efforts will have to be made to increase the volume of exports not only to the dollar area but also to other countries which are in a position to supply the imports required for the implementation of the Plan. The objective of commercial policy must be to maximise, in step with other countries, the volume of world trade. As long as conditions are not favourable for multilateral trading to achieve this, the objective will have to be pursued as best as is possible by mutual agreement between groups of countries for expanding the volume of trade between them, and commercial policy in the period of the Plan will have to be adjusted accordingly.

27. It will be seen from what has been said above that apart from the possibility of having to maintain and enter into bilateral or zonal agreements, it would be necessary also in the period of the Plan to have a close regulation of imports and exports. While continuity of policy is essential in the administration of import and export controls, it cannot be gainsaid that without controls in a vital sector like foreign trade the country will not be able to utilise to the maximum advantage the resources available to it for development.

CHAPTER XXXI

TRANSPORT AND COMMUNICATIONS

INTRODUCTION

The pattern of the transport system in the country will undergo substantial changes as the various agricultural and industrial programmes included in the Five Year Plan are progressively implemented. For instance, the increasing output of foodgrains within the country and the manufacture of fertilisers at Sindri will imply diminishing movement of these commodities from the ports and at the same time a growing demand for the internal transport requirement. On the other hand, the new cement factory at Rajgangpur which commenced production early in 1952 and the expansion of the Andhra Cement Company at Vijayawada will reduce the demand on the transportation system by expanding production in the vicinity of the consuming centres. Generally, however, the cumulative effect of the Plan will be to increase the overall demand for transportation facilities. To cope with the problem, the probable points of increasing demand for transportation facilities should be known in order either to provide the necessary facilities or to relieve the strain on the system by diverting traffic elsewhere.

2. Broadly speaking, the plans for railway and maritime transport, envisaged in this Chapter, have as the primary objective the rehabilitation of assets which has been postponed for a long time due to various factors. Auxiliary facilities for aerial and maritime transport have also been taken into account. The potentialities of rivers for the development of inland water transport are yet not fully appreciated but the establishment of the Ganga Water Transport Board for developing navigation on the river Ganga shows a realisation of a new transport facility.

I. RAILWAYS

3. The Indian railway system is the largest nationalised undertaking in the country. It is one of the few railway systems in the world with a net earning power adequate to meet all fixed charges and provide substantial sums for development and reserves. The principal reason for this is to be found in the high levels of both passengers and goods traffic in recent years and the rationalisation of the structure of rates and fares carried out in 1948.

4. The most serious problem facing the railways today is the task of rehabilitation and provision of adequate equipment. During the last twenty years, railways' assets have been put to intensive and extensive use with little opportunity for rehabilitation. In the thirties the Indian railways were caught in the world-wide economic depression and their earnings were insufficient even to meet the interest liabilities to general revenues. Maintenance was slowed down or deferred from year to year, while renewals and replacements had to be limited

to the minimum permitted by the requirements of mere safety in operation. The railways were just emerging from the depression in 1937, and were attempting to overtake the arrears of maintenance and replacements, when the second world war intervened in 1939 and interrupted this process.

5. In the first phase of the war, the Indian railways, despite the shortage, had to release wagons, locomotives and track materials for the Middle East. Over 8 per cent of the metre gauge locomotives, 15 per cent of metre gauge wagons, 4,000 miles of track, and 4 million sleepers were released for use overseas and in India on military projects. For this purpose, the railways were obliged to dismantle as many as 26 branch lines. In the second phase of the war, India became the base for the offensive against Japan and a large number of railway workshops had to be diverted to the manufacture of munitions and other items required for war. In these circumstances, abnormal arrears of renewals and replacements accumulated, and internal facilities for rehabilitation were appreciably curtailed or incapacitated by the mobilisation and intensive utilisation of workshop equipment in connection with the requirements of the war.

6. As soon as the hostilities ended, new problems came up in the wake of Partition. The division of the North Western Railway deprived the Indian portion of the majority of workshops and maintenance and repair facilities. Similarly the division of the Bengal Assam Railway left the Assam Railway without any workshop or a link with rest of the railway system. The loss of the port of Karachi led to the diversion of traffic to Bombay causing a great deal of congestion and creating a transport bottleneck in the Bombay Port. This necessitated the development of a major port at Kandla and the construction of the Kandla-Deesa rail link.

7. Thus, the problem of rehabilitation and replacement created by the post-1930 economic depression, neglected by the conditions of the war years, and accentuated by the special features of Partition has become the major concern of the railways.

Magnitude of the Rehabilitation Programme

8. The magnitude of the problem of rehabilitation may be judged from the abnormal proportion of the overaged stock. From detailed figures summarised below it will be observed that the arrears of renewals already accumulated by March 31, 1951, amounted to 1,050 locomotives, 5,514 coaching vehicles, and 21,418 wagons, against the normal figures of average annual renewals of 190 locomotives, 650 coaching vehicles and 5,000 wagons. For an overall picture of the position during 1951—56, it is necessary to add to these figures the numbers which will become overaged during this period. The total stock which will have reached the normal age for replacement by March 31, 1956, is, therefore, 2,092 locomotives, 8,535 coaches and 47,533 wagons.

Rolling Stock Requirements for Renewals 1951-56

	Loco-motives	Coaching vehicles	Goods wagons
Number on line on Class I railways on March 31, 1951	8,209	19,193	199,094
Estimated average annual renewals	190	650	5,000
Number requiring replacement on March 31, 1952, being over 40 years of economic life in the case of locomotives and wagons and 30 years in the case of coaching vehicles	1,050	5,514	21,418
Stock overaged and replaced but retained in service on March 31, 1951	1,604	1,381	25,838
Number expected to become overage between March 31, 1951 and March 31, 1956	1,042	3,021	26,115

9. What has been stated in the previous paragraphs refers only to the mobile equipment. The state of the immobile equipment has been a subject of no less concern. The condition of the track has also deteriorated during the last two decades, during which renewals were carried out only to the minimum extent required for safety in operation, leaving considerable rehabilitation of the track for completion in future. Speed restrictions have had to be continued on hundreds of miles of main lines as track renewals could not be carried out. The primary task of the railways is, thus, to overtake this heavy accumulation of arrears at as early a date as possible.

Demands on the Railway System

10. The importance and urgency of rehabilitation has to be considered from yet another point of view. The capacity of railways to handle traffic, adversely affected by the factors just referred to, was strained even further by the unprecedented increase in the volume of traffic. The remarkable increase in the demand for rail transportation in recent years is borne out especially by the statistics of passenger traffic. The passenger miles on Class I railways increased from 17,780 millions in 1938-39 to 39, 720 millions in 1950-51. During the same period, the freight carried increased from 21,786 million ton miles to 26,581 million ton miles. It has been possible to move increased traffic of these dimensions only by resorting to measures which would not be approved under normal conditions. Shortage of power and rolling stock has been sought to be met by retaining in service overaged and even replaced equipment which would normally have been scrapped. The replaced stock retained in service amounted on March 31, 1951 to 1,604 locomotives, 1,381 coaching vehicles, and 25,838 wagons. Until additions are obtained, this level of replaced stock in service will have to be maintained. Overcrowding in passenger trains has had to be allow to continue to cope with the vastly increased traffic. As regards goods traffic, operation of goods specials, increased loading, sacrificing speeds, and other expedients have been resorted to in order to move the traffic. If the problem had been only a temporary phenomenon, these steps might have served the purpose and might have been discontinued when the needs disappeared. But it has have now become necessary

to provide as a permanent measures for a definite increase in the levels of traffic. The figures quoted above relating to goods traffic refer only to the tonnage actually moved by the railways and not what they could have moved if the capacity and power were available. Passenger traffic has possibly reached the peak for the time being, but an increase of 10 per cent over the present levels of freight traffic is anticipated by the end of the period of the Plan.

11. The rehabilitation programme of the railways has thus to take into account the two separate problems of deteriorated assets and the needs of the increased traffic.

Future Programme

12. Before proceeding to consider the future programme, it is necessary to refer briefly to what has been achieved during the four years following Partition. The locomotives and rolling stock placed on the line during 1946-47 to 1950-51 are shown in the following table. It will be seen that the effort during the post-Partition period has fallen short of the needs of the situation :

New Rolling Stock Placed on the Line (Units)

	1946-47	1947-48	1948-49	1949-50	1950-51
Locomotives . . .	518	28	104	412	293
Coaching vehicles . .	120	156	238	337	479
Goods wagons . .	14,580	5,424	2,522	1,443	3,106

13. Apart from the question of finance required for the procurement of rolling stock there is also the question of manufacturing capacity both in this country and abroad. Shortages in steel and other essential materials and priorities of national requirements render the supply position in other countries often extremely difficult. Domestic manufacturing capacity is limited and will have to be increased considerably if the shortages are to be made good by it within the next few years.

Manufacture and Import of Railway Equipment

14. With a view to eliminating dependence on external sources of supply, the Central Government have set up a workshop for the construction of locomotives at Chitranjan at an estimated cost of about Rs. 15 crores. The eventual production target for these works is 120 locomotives and 50 spare boilers per annum, but during the initial stages, *i.e.*, period of the Plan, it is expected that 268 locomotives will be manufactured. The Government have also extended financial assistance to the Tata Locomotive Engineering Company by participating in its capital structure to the extent of Rs. 2 crores. About 170 locomotives are expected to be supplied by this firm during the period of the Plan.

15. The position regarding coaching stock has already been explained. Improvement in affording substantial relief to overcrowding and eventually eliminating overcrowding is dependent on obtaining sufficient coaches. Every effort is being made to utilise fully the

internal resources, but domestic capacity is limited. In 1948-49 the indigenous production of coaching vehicles was only 238; in 1949-50, 337; and in 1950-51, 479. The estimated output of indigenous production during the period of the Plan is 4,380.

16. To supplement indigenous production, the Central Government have taken in hand the establishment of a coach building factory at Perambur at a cost of Rs. 4 crores with an annual single-shift production capacity of 300 to 350 all-steel integral type coaches.

17. Domestic capacity for production of wagons is only slightly better in comparison. The 1948-49 indigenous production came to 2,520 wagons; in 1949-50, 1,095 wagons; and in 1950-51, 2,924 wagons. The estimate of indigenous production during the period of the Plan is 30,000 wagons.

18. It will thus be seen that the output from indigenous sources for the manufacture of railway coaches and wagons falls substantially short of the present requirements for rehabilitating railways. In order to make good the deficiencies, imports will be necessary.

19. The import programme of the railways during the period of the Plan includes 600 locomotives, 1,294 coaching vehicles and 19,143 goods wagons within the funds likely to be available. The actual requirement of new locomotives from abroad, in view of the low capacity of internal production, is considerably more than the figure shown here. The programme also includes requirements of spare boilers, cranes and marine stock at an estimated cost of Rs. 1·7 crores per annum.

Rehabilitation of Track

20. The deteriorated condition of the track has already been referred to. The magnitude of the problem will be evident from the fact that at present speeds have been restricted over about 3,000 miles of track on account of its weak condition. It is proposed to deal with 400 to 500 miles of track every year, and it is hoped that the restrictions on the main trunk routes will be removed within the period of the Plan.

21. As far as track renewals are concerned, the maximum use is at present made of the indigenous capacity for the production of track materials, and it is not proposed to import any rails or sleepers from abroad. During 1949-50, Class I railways purchased 2·3 million wooden sleepers at a cost of Rs. 3·90 crores. In addition, over 800,000 cast iron and over 600,000 steel sleepers were also purchased. It is anticipated that the purchase during the period of the Plan will be of the same order. In view of short supplies and rising prices, it is necessary to effect economies in the use of timber. The possibility of using half round sleepers for some metre and narrow gauge lines is being examined. Further, treatment of timber to prolong the life of sleepers should be adopted more extensively. The Railway Plan provides for the creation of two new depots for creosoting of timber at Clutterbuckganj and Coimbatore in addition to those already in existence at Dhilwan in the Punjab and Narkatia in Assam.

22. While rehabilitation is indeed the primary task, there are also problems arising from the obligations of the railway system as a public utility concern. The urgent problem of removing overcrowding needs no reiteration. In view of the enormous increase in the volume of passenger traffic, perceptible relief to overcrowding can come only with more coaching stock becoming available and permitting the operation of more passenger services.

Railway Development Under the Five Year Plan

23. For many years there has been considerable demand for improved amenities at railway stations as well as in trains. The inconveniences and difficulties of passengers travelling by the third class have been ventilated in Parliament and outside. Measures for improving the comforts and conveniences in travel, particularly in the lower classes, are now actively in hand. In accordance with this policy, a bulk provision of Rs. 3 crores is being made each year for passenger amenity schemes.

24. There is also the problem of coping with the increase in goods traffic. The volume of goods traffic has been steadily increasing from year to year, reflecting the effects of the progressive industrialisation of the country and the development of major projects. A significant example of the effect on rail transport of a new project is afforded by the Sindri fertiliser factory for which the railways have daily to move over a thousand tons of gypsum, a full train load, from the quarries in Bikaner to the site of the factory in Bihar. The distribution of the finished product throughout the country also calls for additional transportation. The opening of the Kandla port during the period of the Plan affords yet another instance. The linking up of that port with the hinterland will mean greater movement of transport from the new areas which await considerable development. Production has been on the increase in the many fields of industry, such as coal, sugar and jute and in accessory raw materials required by these and other industries. All these represents a substantial increase in transportation required for the haulage of raw materials to the factory sites and of the manufactured products to the centres of consumption or ports for export. The execution of other major development projects will similarly impose heavy additional demands on the transport system. The assessment of what the impact of development programmes would be on the transport economy of the country in general, and the railways in particular, is a continuous one and this aspect should receive close attention.

Financing the Railway Plan

25. In order to overtake the accumulated arrears of maintenance and rehabilitation and to provide for an immediate programme of development for meeting the minimum obligations of the railways as a public utility concern, it is considered that the Railway Plan for the five-year period should provide for an average expenditure of not less than Rs. 80 crores a year or Rs. 400 crores in the aggregate. The bulk of the proposed allotment of Rs. 80 crores a year will be taken up by rehabilitation. This will enable the railways to handle more efficiently passenger and goods traffic at around present levels. The provision in the Plan for new lines is

about Rs. 20 crores. The increase in industrial activity in the country as a result of the Plan will make increasing demands on the railway system. In the case of certain expansion schemes, such as for iron and steel or for mineral development, the expenditure needed for providing the necessary railway facilities will have to be treated as part of the expenditure on the project concerned. It is not possible at this stage to estimate precisely the requirements of the railways in respect of all the additional demands that might be made on them but it is intended that out of the lumpsum provision of Rs. 50 crores in the Plan for further expansion of basic industries and transport, the railways will get the necessary allocation.

26. Of the total expenditure on the Railway Plan of Rs. 400 crores, the contribution from the Central revenues will be Rs. 80 crores, the balance of Rs. 320 crores being raised by the railways from their own resources. Stated on an annual basis, this means that as against a contribution of Rs. 16 crores a year from the Central revenues, the railways are required to find from their current revenues, on an average, Rs. 64 crores a year. This, on the present estimates, would appear to be a reasonable target. There are, however, pressing demands on the railways for improvement of passenger amenities and reduction in overcrowding which are likely to result in considerable increase in the working expenses. The policy of the railways during the period of the Plan should be to keep down the working expenses to the lowest level compatible with efficiency and reasonable standard of service in order that the necessary surplus for financing the development programme becomes available. The programme in hand represents, in the judgment of the Ministry of Railways, the minimum that must be seen through, so that if there is an unavoidable shortfall in the resources, it may become necessary to draw further on the reserve funds.

27. The expenditure of the railways during the period of the Plan, according to the present calculations, is to be phased as shown in the table appended to this Chapter.

2. SHIPPING

28. The importance of shipping in a country with a long coast line and a large maritime trade can be easily appreciated. A mercantile marine is a second line of defence in times of crisis. It serves not only as an auxiliary force but also as a training ground for the navy, besides being indispensable for the carriage of essential supplies from overseas in times of war. In view of the importance of shipping under national flag, the coastal trade of the country was reserved in 1950 for Indian vessels in response to a public demand which had been made for the past 25 years. The Central Government have undertaken the major share of the responsibility for the training of the personnel for the merchant navy. They have also taken over the ship-yard at Visakhapatnam in order to foster shipbuilding.

29. The Shipping Policy Committee (1947) had recommended that the target for Indian shipping for the subsequent five to seven years should be a total of 2 million tons and had suggested the lines on which this was to be done by Indian shipping in the various ear and distant trades. This target has not been chieved although the total Indian-owned tonnage, which was 125,000 G.R.T. before the war and 100,000 G.R.T. in 1946, increased to 362,150

G.R.T. by the end of 1950. Including the Moghul Line tonnage, the total Indian registered tonnage is 417,257 G.R.T. Early in 1951, there were 73 ships with a gross registered tonnage of 217,202 on the Indian coast and 24 Indian-owned ships of a total gross registered tonnage of 173,505 in the overseas trades. Some minor ships, though registered, are not active. More than half the coastal fleet is over 20 years of age.

30. An expansion of tonnage is necessary, firstly, to implement the policy of coastal reservation, and, secondly, to ensure fuller participation in the overseas trade. The shipping companies, however, are in need of financial assistance because of the condition of the investment market during the last three years and the fact that these companies, most of which were started recently, have not been able to build up any significant reserves. Taking into account the financial resources available, a programme of development is formulated which aims at increasing the total gross registered tonnage in the coastal and overseas trades to about 600,000 by the end of the period of the Plan. Some assistance may be forthcoming from the International Bank for Reconstruction and Development for the acquisition of additional tonnage, especially in view of the importance of carrying foodgrains, but whether, this materialises or not, it is essential that the programme of expansion indicated below is implemented.

Coastal Shipping

31. In order to assist the shipping companies in replacing obsolete tonnage operating on the coast, the Central Government have provided funds for construction of ships at the Visakhapatnam shipyard. A total of 100,000 G.R.T. is expected to become available from this shipyard during the period of the Plan. Out of this, about 60,000 G.R.T. will be utilised for replacement of obsolete tonnage and the balance for providing additional tonnage mainly for the coastal trade. Ships from the Visakhapatnam shipyard will be sold to the shipping companies at reasonable prices. The difference, if any, between the cost of construction and the sale price will constitute the subsidy to the ship-building industry. The expansion of tonnage is thus linked with the development of the shipyard at Visakhapatnam so that its capacity is fully utilised.

32. In order to make coastal reservation effective, the total tonnage required is estimated at 300,000 G.R.T. This also covers the requirement of near trades, *e.g.*, India-Pakistan, India-Burma and India-Ceylon. The output of the Visakhapatnam shipyard will help in replacing part of the existing tonnage engaged on the coastal trade and also in supplementing it. A provision of Rs. 4 crores as loans to the shipping companies has been made in the Plan. The shipping companies themselves may be expected to raise a sum of Rs. 2 crores. It is hoped, therefore, that with an amount of Rs. 6 crores, a substantial portion of the necessary additional tonnage will be acquired. However, in view of the prevailing high prices, nearly 50 to 75 per cent of the additional tonnage will have to be second-hand.

Overseas Shipping

33. Additional tonnage will have to be acquired to enable Indian shipping companies, engaged in overseas trades, to participate more effectively in certain routes (India-U.K./Europe, India-U.S.A., India-Australia) in which they operate today and in order that they may participate in others, such as, India-Far East-Japan routes. In some of these routes they have commitments with the shipping conferences as to the tonnage to be added by a certain date. In consultation with the representatives of the shipping companies and the Ministry of Transport, the minimum requirement of additional shipping for overseas trade has been placed at about 100,000 d.w.t., excluding 60,000 d.w.t. required by the Eastern Shipping Corporation for which a sum of Rs. 4·4 crores to cover the Government's contribution has been provided. The additional tonnage for overseas trade will be acquired from the loan of Rs. 6·5 crores provided by the Government and supplemented by an amount of Rs. 2·2 crores to be advanced by the shipping companies.

Rate of Interest on Loans

34. The shipping companies have urged that the ability to utilise loans provided in the Plan is dependent on the rate of interest charged. This is more so in the case of the companies engaged in overseas trade who have to face keener competition than those engaged in coastal trade, which is sheltered on account of coastal reservation. We agree that there is justification for a lower differential rate of interest on loans for purchase of tonnage for overseas routes. Such rates may involve an element of subsidy to shipping and it may be necessary to have the standard costs examined.

Fiscal Concessions

35. The shipping companies have suggested that the following concessions should be allowed to enable them to raise the necessary finance for replacing obsolete tonnage and acquiring additional tonnage according to the programme :—

(*a*) Profit on sale of old ships may be exempted from taxation on condition that the entire sale proceeds are utilised for replacing the vessels.

(*b*) Depreciation allowances admissible for taxation purposes should be related to original cost or replacement cost, whichever is higher.

(*c*) The shipping companies should be entitled to seek assistance from the Industrial Finance Corporation.

The fiscal concessions envisaged at (*a*) and (*b*) are of a general character. A uniform policy has to be followed in regard to all industries in such matters. The suggestion at (*a*) may, however, be examined in view of the high cost of the main asset of this particular industry, namely a ship. As regards the third suggestion, legislation to enable the Industrial Finance Corporation to assist the shipping industry is under consideration.

Programme of Acquisition of Tonnage

36. Additions to Indian tonnage during 1951-52 consisted of a total of 18 ships of an aggregate G.R.T. of about 57,000, which includes, besides three ships built at the Visakhapatnam shipyard, one large ship built in the United Kingdom for the Scindias, one each purchased second-hand by the Bharat Lines and the New Dhodera Steamship Company with the aid of Government loans, two new diesel ships built in Japan for the Great Eastern Shipping Company, two second-hand ships purchased by the Scindias from the United Kingdom and eight small ships purchased second-hand by various small companies. As against these additions three Indian ships of an aggregate G.R.T. of 14,000 were sold to foreign buyers and one ship of about 1,000 G.R.T. was lost, so that the net increase came to 42,000 G.R.T.

The following table shows the programme for the acquisition of shipping tonnage during the period of the Plan :

	Additional Tonnage G.R.T.	Financial Investment Total (Rs. crores)	Foreign exchange (Rs. crores)
Coastal Trade			
(*i*) Tonnage from Visakhapatnam shipyard . .	100,000*	9·0	Nil
(*ii*) Additional tonnage	65,000	6·0	6·0
Overseas Trade			
(*i*) Additional tonnage (100,000 d.w.t.) . . .	70,000	8·7	8·7
(*ii*) Ships for the Eastern Shipping Corporation .	40,000	6·0	6·0

38. At the end of the Five-Year period, the tonnage in the coastal trade would be about 315,000 G.R.T. and in the overseas trade 283,000 G.R.T. totalling about 600,000 G.R.T.

39. Since the Central Government will be extending financial assistance to shipping companies in order to expand their tonnage, a continuous watch will have to be maintained with a view to ensuring that the coastal rates of freight and passenger fares are reasonable, that the companies make adequate provision for purposes of replacement and renovation and that the management is efficient and progressive.

Nature and Quantum of Expansion Based on Foreign Assistance

40. The provision made for shipping will not meet all the requirements in the coming years, *e.g.*, replacement of all overaged passenger ships, the nucleus of a tanker fleet in connection with the projected oil refineries and the acquisition of a certain volume of tramp shipping, which is of considerable value in importing foodgrains and in similar duties in times of difficulty.

*60, 000 G R.T. would be for replacement of over-aged ships.

These requirements should be borne in mind in diverting unutilized amounts from the funds earmarked as loans to the shipping companies as well as any additional amount that may become available through foreign aid. This does not mean the shipping industry will be relieved entirely of their share of 25 per cent or 33-1/3 per cent, as the case may be, of the cost of meeting these requirements. In the case of tankers, however, the Government may have to meet the entire cost themselves.

Sailing Vessels

41. According to the Sailing Vessels Committee's Report published in 1949, sailing vessels continue to carry a substantial volume of cargo. The Committee has estimated that 150,000 tons of shipping under sail consisting of about 2,600 vessels carry about a million to a million and a half tons of cargo every year. Taking the average cost of these vessels at Rs. 250 a ton, the capital outlay on sailing vessels is estimated at Rs. 4 crores. These vessels employ about 40,000 men, namely, 2,500 masters, 2,500 mates and about 35,000 seamen.

42. It is certain that there will be scope for sailing vessels on the Indian coast for some years to come. Having regard to the volume of cargo carried by sailing vessels every year, the capital invested and the number of seamen employed, it is desirable to place the sailing vessels industry on a sound footing. The need is not so much to embark upon large-scale expansion of tonnage under sail as to reorganise the industry on a rational basis in order to increase the effectiveness of the existing tonnage. It is necessary that uniform rules and regulations should be prescribed for the registration of sailing vessels and for the tonnage measurement of such vessles. Steps should be taken for the assignment of free board for sailing vessels according to some simple formula. It is also desirable that life-saving appliances and safety standards applicable to sailing vessels should be improved. Coastal traffic under sail should be reserved for vessels of Indian registry. The procedure for lodging protests involving loss of life or cargo or damage to cargo by jettisoning or otherwise requires to be tightened up. Effective methods of investigating such cases should be introduced. Encouragement should be given to the fitting of sailing vessels with auxiliary engines. The personnel employed on sailing vessels should be required to undergo suitable tests to ensure a minimum standard of proficiency. Such personnel should also be included in the welfare schemes for other seamen. Port and repair facilities for sailing vessels should also be improved.

43. To give effect to these suggestions, the services of a full-time officer and adequate staff will be required. A special organisation under the Director General of Shipping has been set up recently for the purpose.

Co-ordination of Shipping with Other Transport Agencies

44. Movements of goods between port and port are effected by both railways and coastal ships. Country crafts compete to a certain extent with ships in the coastal trade. Although competition between these agencies of transport may not be serious at present owing to bottlenecks in the railway system and insufficiency of coastal shipping, possibilities of keen rivalry

exist when conditions are normal. Measures such as reservation of transport of certain commodities to sailing vessels and co-ordination of traffic between railways and coastal ships may have to be taken in future for utilising the various transport services to the best possible advantage.

Technical Training

45. The importance of technical training for securing the necessary pool of officers, engineers and crew for Indian shipping has been recognised in the plan which provides for an expenditure of Rs. 1·10 crores for training schemes for marine engineers and merchant navy ratings.

Lighthouse Development

46. Lighthouses are important ancillary facilities provided for shipping. Though Partition has brought about a shrinkage of the coastline under the charge of the Central Lighthouse Department, the subsequent Federal Financial Integration has acted in the contrary direction and increased its responsibilities. At present, there are 120 lighthouses along a coast of 4160 miles (including Andaman Islands) under the direct charge of this Department. In addition, there are lighthouses called " local " lighthouses maintained and administered by port authorities or the State Governments concerned. The total number of lighthouses now exceeds 1700. It has been decided that all these aids to navigation should be brought on to a Central Register and gradually taken over by the Centre as the Constitution has classified this subject as a Union responsibility.

47. Many of these lighthouses, particularly in the former Princely States, require immediate improvement and a plan estimated to cost Rs. 1·0 crore has been formulated. Over the next five to seven years, the Lighthouse Department visualises a development expenditure of about Rs. 2·5 to 3·0 crores. This excludes the requirements of Andaman and Nicobar Islands where aids to navigation are reported to be hardly existent and for which plans have yet to be drawn up.

48. A sum of Rs. 2·0 crores is estimated to be required during the period of the Plan for the projects mentioned above as well as for the purchase of one out of two lighthouse tenders required for catering to the needs of the East and the West Coasts. The ready availability of tending facilities is indispensable since stores, provision and personnel have to be carried to lighthouses situated in the sea which also require attendance of working parties for repairs and other services. For enabling the Lighthouses Department to implement this programme, a loan of Rs. 0·8 crore has been provided for in the Five-Year Plan. The balance of Rs. 1·2 crores will be secured partly from the General Reserve Fund and the Depreciation Reserve Fund partly by increasing the levy of light dues progressively to three annas in the first instance, and subsequently to four annas per ton. Amendment of the Indian Lighthouse Act, 1927, will be necessary and should be undertaken for enabling the Lighthouse Department to increase the rate of light dues from two annas per ton which is the maximum permissible at present.

3. PORTS AND HARBOURS

Ports in India's National Economy

49. Ports are the gateways of foreign trade and commerce of a country and they serve its maritime transport and play a vital part in the national economy. After Partition, India's foreign trade is carried on through the five major ports of Calcutta, Bombay, Madras, Cochin and Visakhapatnam. The loss of Karachi threw an additional strain on the Bombay port to which a part of the traffic previously handled by the Karachi port had been diverted. The present capacity of the five major ports to handle cargo is about 20 million tons per annum excluding petroleum, country-craft and bunkers. As against this capacity, they handled about 20 million tons during 1949-50 including petroleum and country-craft traffic, which shows that there is at present no reserve capacity for coping with a possible expansion of trade in future. Even now the capacity is not sufficient to meet the demands of peak traffic.

Need for Port Development

50. Further expenditure has to be incurred on port development during the period of the Plan owing to the following reasons :

(*i*) There is need for rectifying the consequences of Partition and providing a natural outlet for traffic previously catered for by Karachi. It is mainly for this reason that the development of Kandla as a major port was recommended by the West Coast Major Port Development Committee. The recommendation was accepted by the Central Government and the project taken up for implementation in 1949. The port will cater to the vast hinterland of the Punjab, North Western and Central India more economically than Bombay through a reduction of about 200 miles in transportation. Uptil the 31st March, 1951, a sum of Rs. 0·9 crore had been spent on this project. This scheme has also significance from the viewpoint of rehabilitation of displaced persons from Sind.

(*ii*) A large part of the equipment of ports was intensively used during the war and is now antiquated and obsolete. The dock systems in the ports also need to be modernised. Postponement of renovation and modernisation of these ports would result in slow turnround of ships and economic loss to the country.

(*iii*) The Central Government have undertaken to provide port facilities for the petroleum refineries proposed to be set up at Trombay (Bombay) by the Standard Vacuum Oil Company and the Burmah-Shell Oil Company. As the refineries are expected to go into production before 1955, it is necessary to give a high priority for the provision of oil discharge facilities.

Capital Expenditure for Modernisation and Development During the Period of the Plan

51. In consultation with the port authorities, the Ministry of Transport have worked out a programme of rehabilitation, modernisation, and expansion of the five existing major ports at an estimated cost of Rs. 29·27 crores, consisting of schemes considered eligible for assistance

from the Central Government. This estimate is exclusive of an expenditure of Rs. 12·05 crores on the Kandla port and of Rs. 8·0 crores on the creation of port facilities for the oil refineries and of alternative facilities for the existing establishment on the Butcher Island. If all these projects are taken up, the development expenditure on ports during the period of the Plan will come to about Rs. 54·22 crores. This includes an amount of Rs. 4·90 crores spent in 1951-52 by the port authorities.

Programme of various ports

52. The development of Kandla as a major port will increase the trade handled at this port from about 122,000 tons during 1951 to about 850,000 tons per annum from 1956. The major items in the programme for the Calcutta port are restoration of the Garden Reach Jetty, purchase of wagons, locomotives and a heavy lift crane for handling heavy machinery and equipment imported for use on the river valley projects and construction of two manual coal berths and one mechanical ore berth. The important part of the programme for the Bombay port relates to modernisation of the Princes' and Victoria docks, reconstruction of transit sheds therein and installation of electric cranes at the Alexandra docks. Provision has also been made in the plans of the Bombay, Madras and Calcutta ports for housing of labour. The programme for the Madras port envisages, apart from other less important projects, a wet-dock scheme costing Rs. 2·97 crores during the period of the Plan and two all-weather berths for petroleum oil at a cost of Rs. 0·72 crore. The plan for the Cochin port provides, among other schemes, for the construction of new berths for general cargo at a cost of Rs. 1·6 crores. Developments at the Butcher Island include the construction of a pier, an approach treastle and five pipe lines.

Financing of the port development Projects

53. The administration of major ports is carried on by different agencies. Whereas the Bombay, Calcutta and Madras ports are administered by statutory port trusts, Cochin and Visakhapatnam ports are administered by the Central Government in the Ministry of Transport and the Ministry of Railways respectively. All the major ports are non-profit making, self-financing undertakings with funds of their own which do not enter into the accounts of the Central Government. An examination of the reserves at the disposal of the different port authorities shows that they represent only a small fraction of the total finance which is essential for the modernisation and development of the ports. It is possible to augment the resources of the ports to a certain extent by raising port charges but the policy of raising additional finance by this method will have to vary with different ports, depending upon the surcharges already in force and the scope for further increase. There is a limit to this method because any excessive enhancement of rates on basic materials and foodgrains will tend to increase costs of industrial production and the price of commodities to consumers. It is also not possible to increase the incidence of port charges beyond a certain point in respect of commodities exported as that would react adversely on the volume of exports. Finance for development of ports will, therefore, have to be found :—

(*i*) by drawing on the existing reserves of ports,

(*ii*) by increasing port charges to the extent possible, and

(*iii*) by direct central assistance in the form of loans.

54. Excluding the Kandla Port Development Project which will be financed wholly by the Central Government, a sum of Rs. 42·17 crores will be required for expenditure on all the projects of the port authorities. It has been estimated that the maximum that can be raised by them by the first two methods is Rs. 15·5 crores, including the expenditure already incurred in 1951-52. If all the projects now contemplated are to be taken up, assistance will have to be given to the ports to the extent of Rs. 26·67 crores. So far the ports have been depending on loans, raised from the public or granted by the Government for their large capital works. The quantum of the Government assistance will be reduced to the extent that the port authorities can raise loans in the open market as in the past. It has, however, been pointed out that this source is restricted because there is a limit beyond which the port authorities cannot increase charges for services rendered in order to enable them to pay interest on loans.

55. The Plan provides for an advance of Rs. 12 crores by the Central Government to the port authorities during the Five Year period. In addition, the Central Government will also accept the liability for the creation of port facilities connected with the oil refinery projects at a total cost of Rs. 8 crores. The port authorities have suggested that the loans should be interest free for a period of 12 years at the end of which they should be repayable in instalments together with interest at a reasonable rate. In the broader public interest, the development schemes of ports will have to be financed and for this purpose loans will have to be advanced to the port authorities. Whether ordinary terms can apply to such loans should be carefully examined by the Ministry of Transport at an early date. If the examination shows that there is a case for assistance in the form proposed, it should be made available.

4. Civil Aviation

Progress of Civil Aviation in India.

56. India is favourably situated for the development of air transport, both internal and international. In the internal field, with her vast distances and good flying conditions during the greater part of the year, there is considerable scope for this mode of transport. Almost all the important administrative, industrial and commercial centres of the country are at present connected by air. The night air services which connect the four principal cities form an important part of the airline net-work and fill a long felt need. There is, however, room for more intensive operation on the existing main routes as well as extension to less important towns. In the international field, India occupies geographically an important position in the air routes between the East and the West. This throws upon the Government of this country the obligation to maintain ground services of prescribed standards for the use of the international air services. International services are also being operated by India, both to the West and the East. Further, civil air transport can play a vital role in emergencies, as was evidenced in the evacuation after Partition and in West Bengal and Assam in 1949-50, as well as in relief and other operations in Assam after the earthquake and floods. Finally, the defence aspect of civil aviation should not be lost sight of. All civil aviation equipment, personnel and organisation constitute in effect a reserve for the defence services, which can be

mobilised quickly and made available during an emergency. For these reasons the future plans of development have to take into account the growing needs of civil aviation. Roughly, the capital expenditure on civil aviation development till the end of 1950-51 was of the order of Rs. 10 crores. The expenditure was for provision of aerodrome organisation, including runway, hangars, passenger buildings, lighting, etc.; communication organisation which included radio aids for air navigation ; inspection organisation which related to the supervision and check of airworthiness of aircrafts and other technical equipment and competence of personnel; and training organisation which included the Civil Aviation Training Centre at Allahabad.

57. As part of their post-war plans of development, the Central Government had drawn up a plan for developing, controlling and regulating air transport. The main features of this plan were as follows :—

(*a*) the development and operation of air transport services would be left to private commercial organisations ,

(*b*) the operation of scheduled air services would be subject to licensing by a body called the Air Transport Licensing Board to be set up for the purpose ,

(*c*) all the main air services in India should be operated by about four companies , and

(*d*) the Government might give financial assistance to the operating companies in specific cases.

58. At the end of the war, many companies were floated for the operation of air services. The wartime boom in air traffic had created an impression that commercial air transport operation was a very profitable enterprise, especially as war surplus stocks made available certain types of aircraft at very low prices. These conditions gave an impetus to the floatation of aviation companies and a number of applications were made to the Air Transport Licensing Board for licences for the operation of internal air services. By the end of 1949, nine companies had been granted such licences. It soon became apparent, however, that the financial condition of most of the companies was not reassuring. The Central Government appointed a committee—the Air Transport Inquiry Committee—to investigate the financial condition of the companies and to make recommendations for putting the air transport industry on a firm basis and for developing commercial air transport on sound lines. From the report of this Committee, it is evident that the financial position of the industry as a whole is far from satisfactory and that the main reason for this is that the number of operating units is larger than that required to conduct the available volume of air transport business on an economic basis. The Committee has made recommendations for improving the existing position and the Government are taking steps to give effect to many of them.

59. The development plan for civil aviation projects during the next five years, excluding operation of air transport industry discussed below may be considered in two stages, namely, for the first two years of 1951-52 and 1952-53, and for the next three years of 1953-54 to 1955-56. For the first two years, the amount of capital expenditure allotted is Rs. 1·85 crores per annum. This is made up of about Rs. 1·5 crores per annum for work and the rest for

equipment. For the second period of three years, the total allotment made is about Rs. 9·67 crores. The expenditure will have to be properly phased during the period, the amount to be spent during the last year being in the neighbourhood of Rs. 4 crores. About 70 per cent of the allotment is in respect of work, the remaining being for several items of technical equipment.

Aviation Policy

60. Of late important aspects of the air transport industry have been examined by the Government. For arriving at more precise estimates of replacement requirements, the selection of the aircraft that should replace the Dakota and the Viking, and the methods of financing the purchase of aircrafts, the Director-General of Civil Aviation, Ministry of Communications, held a conference with the representatives of the airline operators in January, 1952. It was agreed at the conference that for operations on semi-international and trunk routes, the Dakota should be replaced by a more modern type of aircraft. Such replacement of the Dakota on the main routes was considered necessary to enable the air transport industry to compete on even terms with foreign air lines operating on these routes. Further, this step would keep the country in touch with the latest development in aircraft design in other parts of the world and also give the necessary training in the servicing and overhaul of new types of aircraft to the technicians in the country. Various factors involved in the question of expansion of air fleet *vis-a-vis* the development of the Hindustan Aircraft have also been considered. It has been found that the expansion programme of civil aviation should be dealt with, for the period of the Plan, independently of the programme of development of the Hindustan Aircraft, although eventually these two programmes will have to be co-ordinated.

61. The requirement of new aircraft before the close of the period of the Plan is estimated at 20, valued at Rs. 10 crores as under :—

	(Rs. crores)
2 aircrafts for the Air India International's Western Services and 3 aircrafts for the Bharat Airways Eastern Services . .	4·5
15 aircrafts for shorter services and major trunk routes in India .	6·0
	10·5

The airline operators represented that they would require assistance by way of loan from the Government equivalent to two-thirds of the total amount, *viz.*, Rs. 7 crores at a concessional rate of interest for acquiring such aircraft.

62. Enquiries have shown that under the present conditions of traffic load and intensity of operations the existing air transport companies cannot work on an economic basis. With the introduction of the more modern aircrafts mentioned above which will be larger and faster and also more costly, economic operations will be possible only if the existing companies merge into

a single unit. A single organisation in charge of internal as well as external operations can handle all the existing traffic with a smaller number of aircraft and also save in overheads and in other directions. Under a single organisation, for example, the requirements of additional aircraft for internal as well as external services will be about 13, instead of 20 mentioned above. The agency for operating the services should be a statutory corporation in which the shareholders of the existing companies may be allowed to participate *pro rata*, if they wish to do so in exchange for their present holdings the value of which should be determined on an equitable basis. The Central Government's share in the corporation should be large enough to ensure control over the industry.

63. The Plan provides for a sum of Rs. 9·5 crores : (*a*) for the purchase of 13 aircrafts, three of which would be of the type required for long-distance international air services, and (*b*) for the payment of such compensation as may be found necessary for acquiring the assets of the existing companies. If the existing air-companies agree to take up shares in the new corporation in exchange for their present holdings, the amount needed will be of the order of Rs. 6·5 crores.

5. Roads

State of Road Development

64. Roads are a service for all forms of development, whether of agriculture, trade, or industry. In the development of roads, a national conception is necessary not only because of their strategic importance but also because of the need for co-ordination between different types of roads. This was recognised in the Nagpur Plan which emphasized that the schemes drawn up by the Centre and the States should be based on the consideration of the road system of India as an integral whole ; and that development should be balanced as between different categories of roads and should proceed in a planned sequence, having regard to the requirements of traffic.

65. Taking the area of the country and the population into consideration, the total mileage of roads in existence at present is admittedly short of requirement. After the advent of the railways, development of roads did not receive adequate attention until the constitution of the Central Road Fund in 1929. Since then, the achievements have been significant. According to the report of the Motor Vehicle Taxation Enquiry Committee (1950), no fewer than 382 new bridges and causeways had been built and 1250 miles of modern surface roads, 1500 miles of fair weather roads and 2200 miles of road reconditioning completed upto the time of their enquiry. The assurance of a continuous supply of funds under this scheme has been an important factor contributing to the progress made. Nevertheless, owing to the expansion of motor transport that has taken place during the last 30 years and developments in the field of industry and trade, the road system in existence is not adequate and there is need for substantial road development being undertaken in future years. The modern motor transport requires

roads with easier curves, wider formations, stronger crusts and smoother surfaces, which are not necessary for other community uses of roads. The number of motor vehicles on the road is steadily increasing and the weight and range of transport vehicles is appreciably greater than it used to be.

66. The Nagpur Report on the Post-War Road Development of 1943 (the Nagpur Plan) visualised the development in a period of ten years of a total mileage of hard-surface roads from about 66,400 miles to 122,000 miles ; of low type roads from about 112,000 to 207,500 miles and the improvement of existing roads, wherever necessary, so that the road system would cater for anticipated traffic needs for the next 20 years. The objective underlying the Nagpur Plan was that no village in a well-developed agricultural area should remain more than 5 miles from a main road. It was a fundamental of this programme that no road should be considered by itself, but as a part of a network and that no road surface should be of a higher standard than was required to carry the existing traffic or traffic anticipated in the immediate future.

67. The expenditure contemplated in the Nagpur Plan was of the order of Rs. 372 crores, of which Rs. 66·5 crores related to national highways and Rs. 305·5 crores to other roads at a price level 50 per cent over pre-war costs ; but taking a level of 200 per cent. over the pre-war cost as an estimate nearer to present day price levels, the expenditure target for the programme contemplated will be Rs. 744 crores of which Rs. 133 crores will be for national highways and Rs. 611 crores for other roads.

68. Owing, however, to shortage of materials, scarcity of trained men, and above all to financial stringency, the programme visualised under the Nagpur Plan had to be spread over a longer period of years. As a result, an expenditure of Rs. 27·1 crores incurred in the States during the 3 years ending the 31st March 1950, represents only about 5 per cent. of the Nagpur Plan target figure. An expenditure of Rs. 9·3 crores on national highways in the five year ending in March, 1952, shows somewhat better progress at 15 1/2 per cent. of the corresponding target figure.

Priorities Under the Five Year Plan

69. Priority in the development of roads has to be determined in relation to plans of development in other spheres in the light of national and local resources and needs. Roads which assist production, and especially agricultural production, should have a high priority in existing conditions. This has been recognised by some of the States, such as Uttar Pradesh, where development of roads forms a part of the schemes of rural reconstruction. It is evident that such roads as are feeders to railways or which relieve congestion to certain junctions and help to open up the country, have to be given preference. Priorities within the State have to be determined by the State itself and obviously such priorities would tend to differ in different States. In West Bengal, for instance, owing to the partition of the State, construction of roads has a particularly high priority. Many of the previous roads were from east to west while now they have to connect north and south, without which certain ' pockets ' cannot be easily reached and their surplus products cannot be made available to other parts of the State

National Highways

70. The Nagpur Plan recommended the classification of roads according to their functions. Thus, roads were divided into National Highways, State Highways, Major and Minor District Roads, and Village Roads. National Highways are " main highways serving predominantly *national*, as distinct, from State purposes, running through the length and breadth of India, which together form a system connecting (by routes as direct as practicable) major ports, foreign highways, capitals of States and including highways required for strategic movements for the defence of India." Subject to certain conditions embodied in the National Highway Scheme, the Central Government assumed financial liability with effect from the 1st April 1947 for the development and maintenance of a provisional system of national highways limited to a length of about 13,400 miles.

71. The mileage originally included (in 1947-48) approximately 1,600 miles of "missing" road-links and about 120 "missing" bridges over very large rivers in addition, to many other bridges, large and small. In the last five years, 160 miles of new roads and seventeen very large bridges with numerous smaller bridges have been constructed and 1,315 miles of road have been improved. There are at present under construction about 320 miles of new roads and eighteen large bridges. The Five Year Plan provides for the completion of the work in hand and the taking up for construction of 450 miles of new roads and 48 very large bridges besides a large number of smaller bridges. In addition, about 2,200 miles of roads are to be improved. Of this programme, about two-thirds will be completed by 1955-56 and the rest will be in progress. Many of the existing bridges are not capable of carrying heavy loads and require reconstruction. This work, however, will be taken up [except as mentioned in para. 73 (3) below] only after all the " missing " road links are built and the unbridged rivers spanned.

72. A sum of Rs. 27·00 crores over a period of five years has been provided in the Central Government's plan for the development of national highways including the probable expenditure on the road element in the proposed rail-cum-road bridge during this period. A separate provision of Rs. 4·24 crores has also been made in the Central Sector for the development of certain selected roads (other than national highways) for which financial liability has already been accepted by the Centre. Further a sum of Rs. 21·15 lakhs has been provided for the Central Road Research Institute where investigations of interest for road development in different regions of the country is to be carried out.

73. The priorities for the National Highways five-year development programme have been fixed on the following basis :—

(1) Completion of all capital works already sanctioned and in progress.

(2) Provision of new bridges and missing road links, as far as possible, along the " arterial " national highways. (The arterial national highways are those that connect the main population centres plus a few whose development has been given priority as a result of Partition).

(3) Urgent replacement or strengthening of existing dangerous bridges and improving sections of existing roads that are uneconomical to maintain or dangerous to traffic.

With the funds provided in the Plan, it will not be possible to close all the gaps even in the arterial national highways—this work together with the development of the remaining national highways will have to be left for future plans.

State Roads

74. These are linked with national highways and along with them constitute a single road system. Their programme is determined by the States themselves though the Roads Organisation at the centre is consulted. Construction of State roads is at present financed from State revenues, which are supplemented by the allocations and grants from the Central Road Fund. According to the schemes envisaged by the State Governments, the mileage of metalled roads will increase from 10,007 miles in 1950-51 to 12,453 miles by 1955-56 in the Part 'A' States and from 7,588 miles to 8,129 miles in the Part 'B' States. During the same period the mileage of unmetalled roads will be reduced from 2,199 to 757 miles in the Part 'A' States and 526 to 206 miles in the Part 'B' States.

75. The Road development plans of the Part 'C' States are being framed with a view to providing for the construction of as many new roads as possible for opening up areas which are at present inaccessible, while improvement and reorientation of the existing roads to meet the changed administrative requirements and the economic development of the areas is also being given due emphasis.

76. The total provision for road development in the plans of the States is Rs. 73·54 crores, out of which the Part 'A' States account for Rs. 50·59, crores, and the Part 'B' States for Rs. 16·68 crores, the balance being accounted for by the Part 'C' States.

Village Roads

77. As regards village roads, the broad aim should be to connect the more important villages with marketing centres and district headquarters. The absence of a sufficient mileage of village roads is a serious drawback in the system of communications. The State Governments should pay special attention to the construction and maintenance of these roads and for this purpose enlist the co-operation of villagers. In certain States, village roads are, in fact, being developed with the active co-operation of the villagers themselves who contribute a portion of the cost of construction by way of free labour, free gift of land or money, the balance being contributed by the State Government or district boards. As a token of the Central Government's interest in the development of village roads, the Roads Organisation have formulated a 'model scheme' for village road development on a co-operative basis and has made an initial offer of a grant of Rs. 15 lakhs from the Central Road Fund Reserve as a contribution towards specific projects. There is considerable scope for development of village roads on co-operative basis by mobilising the local population for executing local projects.

78. The programme described above is exclusive of likely road development under the community development projects. Tentatively it has been estimated that 16,000 to 17,000 miles of *kutcha* roads will be constructed in the village units falling under those projects.

Finance for Road Development in the Five Year Plan

79. As already explained above, the principal difficulty in the development of roads in recent years has been the paucity of finance. The Motor Vehicle Taxation Enquiry Committee, 1950, have suggested certain measures for augmenting the resources for road development which should be considered by the Central and State Governments. The importance of continuity in the supply of funds with a view to avoiding wasteful expenditure and pursuing even modest programmes without interruption needs to be recognised by the Central and State Governments.

80. The bulk of the finance for road development will go towards acquisition of land, purchase of materials, and payment of labour. The foreign exchange requirement for the purchase of machinery has already been considerably reduced with the manufacture of steam and diesel road rollers in the country. The Tata Locomotive and Engineering Company have, upto the end of February 1952, manufactured and supplied 830 steam rollers against an order for 950 units. Similarly, Messrs. Jessop and Company of Calcutta have manufactured and supplied all the 475 diesel road rollers ordered from them. At present, considerable foreign exchange is being spent for importing asphalt for black topping of roads. Imports fluctuated between 47,100 tons and 79,363 tons per annum between 1948-49 and 1950-51. With the establishment of petroleum refineries during the period of the Plan, asphaltic bitumen will be available from domestic sources from 1955-56 and this will result in a further saving of foreign exchange.

6. Road Transport

Emergence of Public Road Transport Services

81. The beginnings of commercial motor transport in India can be traced to about the year 1920 when the opportunity for its development was created by the military vehicles rendered surplus after World War I. There was a rate-cutting competition among the private bus operators *inter se* and between road and rail transport agencies. By 1930, the large diversion of passengers from railways to roads resulted in considerable loss of railway revenues. The question of rail-road competition was examined in subsequent years and with the coming into force of the Motor Vehicles Act in 1939, a beginning was made in the direction of creating fair conditions of competition and controlling the development of road transport along proper lines. The acceptance in 1946 of the policy of encouraging the formation of transport undertakings on tripartite basis, *viz.*, private operators, the State Governments and railways was the next significant development. The latest development in motor road transport is the formation of statutory transport corporations by certain State Governments under the Road Transport Corporation Act, 1948, subsequently replaced by the revised Act of 1950.

82. At present, there are in the country approximately 47,575 operators of whom 25 own a fleet exceeding 100 ; another 50 exceeding 50 vehicles but not exceeding 100 ; and less than 1,500 operators, a fleet exceeding 5 but not exceeding 50 vehicles. There are more than

46,000 small operators, each owning 5 vehicles or less. State-operated services exist in varying scales in Assam, Bihar, Bombay, Madhya Pradesh, Madras, Orissa, Punjab, Uttar Pradesh, West Bengal, Hyderabad, Madhya Bharat, Mysore, Rajasthan, Saurashtra, Travancore-Cochin, Kutch, Himachal Pradesh, Manipur, Bilaspur and Delhi. The pattern of management varies. In Orissa and Madhya Pradesh, the undertakings are managed by joint-stock companies. In Kutch, a non-statutory authority manages the services. In Bilaspur, Bombay and Delhi there are statutory bodies. In the other States, operation is undertaken departmentally. In Bihar, Hyderabad, Kutch and Mysore, it has been decided to set up statutory corporations under the Road Transport Corporations Act, 1950. The railways have participated financially in the undertakings in Bombay, Madhya Pradesh, Punjab, and Orissa with a total contribution of Rs. 2·586 crores towards capital outlay, the State Governments' contribution being Rs. 4·7 crores.

83. State participation in public road transport is intended to achieve greater efficiency and economy in operation and management which a large number of small operators functioning separately will not be able to do. Only large organisations with adequate financial resources can provide the workshop and other facilities which are essential for rendering efficient service and realising the economies resulting from large-scale operation. The benefit of such economies can be passed on to the consumer as well as the transport worker if commercial road transport is under public ownership. While participation by the State Government in road motor transport services is thus advantageous to the public, the displacement of private operators creates certain problems. Partly in recognition of this situation, the State Governments are generally pursuing a policy of nationalising road transport in gradual stages within the resources available. Certain State Governments have also made provision in their schemes for financial participation by private operators at their option. It is desirable for the existing private operators' units to amalgamate, wherever possible, into big, viable units to enable them to achieve better returns and maintain better standards of operation.

84. The programme of commercial road transport in the private sector is not available. As regards the public sector, the investment on public road transport services (capital at charge) as in June 1950 in all the States was nearly 12·0 crores and at present it stands at Rs. 17·13 crores. This investment is made up of contributions of the State Governments, railways and private operators.

Programme of State Road Transport Services

85. In the Five Year Plan, the investments of the State Governments on road transport between 1951 and 1956 is envisaged at Rs. 8·97 crores. The investment of the Part A States on road transport services which was Rs. 8·33 crores in June 1950, is expected to increase by Rs. 5·62 crores by the end of the period of the Plan. Whereas Assam, Orissa, West Bengal, Bombay and Uttar Pradesh are the States in which developments are envisaged, substantial expansions would be effected only in the last three States. The expenditure on road transport in these three States during the period of the Plan will be as much as 91 per cent of the total. Developments in the Part B States are restricted to Travancore-Cochin, Saurashtra and Rajasthan; and in the Part C States to Bilaspur, Manipur, Himachal Pradesh and Delhi. The expenditure in the Part B States is estimated at Rs. 0·96 crore out of which Saurashtra will spend Rs. 0·53 crore and Travancore-Cochin, Rs. 0·42 crore; out of Rs. 2·39 crores allotted

for road transport in the Part C States, the Delhi Transport Authority will be spending Rs.2·16 crores during the period of the Plan. About a third of the investment by the Delhi Transport Authority will be incurred on tramways.

86. The railways, as explained above, participate in the public road transport undertakings brought into existence by the State Governments. The present investment of the Central Government in the public transport services in various States is estimated at Rs. 3·53 crores as against Rs. 1·55 crores at the beginning of the period of the Plan. It is envisaged that the Ministry of Railways will participate in road transport programmes of the State Governments but it is difficult to forecast at this stage what their investment on such undertakings during the period of the Plan will be. It is expected that the resources necessary for the participation of the railways in State transport undertakings will be found from the funds provided for the Railway Plan.

87. Investment on road transport in the public sector will be directed *inter alia*, to : (*i*) purchase of about 2,000 transport vehicles, and (*ii*) establishment by the bigger units like the State road transport services of Bombay, Uttar Pradesh and Delhi of up-to-date workshops for maintenance, repair and overhaul of the transport fleet owned by them. Facilities for training operatives are also envisaged. Two points of importance arise in connection with the purchase of transport vehicles, *viz.*, (*i*) standardisation of vehicles used by the State transport services and co-ordination of programme of replacement and expansion of transport fleet with the development of the indigenous automobile industry, and (*ii*) use of diesel *versus* petrol driven vehicles. These two issues have been referred by the Central Government to the Tariff Commission in connection with the investigation into the claim for protection for the indigenous automobile industry. The State transport services should adjust their programmes in accordance with the recommendations that may be made by the Tariff Commission. As regards the agency for running the State transport services, we are of the opinion that whenever road transport services are run by the State, a corporation should be formed for the purpose as that would provide the necessary autonomy and would lead to more efficient administration. The ground has been cleared for the formation of State transport corporations by the Road Transport Corporation Act, 1950, passed by Parliament.

7. COMMUNICATIONS

The State of the Communication Services

88. The communication services in India, which comprise postal, telegraph, telephone and wireless communications, are provided by the Posts and Telegraphs Department, which next to the railways, is the largest department of the Central Government. The Department is responsible not only for the communication services for the general public but also for such specialised sections as the commercial community, the press, the railways, the canal administrations, and the defence services. It is primarily a public utility department but is run on a commercial basis so as not to be a burden on the general revenues.

89. The postal and telegraph facilities have been in existence in India for a little over a century. The growth has been slow and steady but, having regard to the size of the country, development has lagged behind the actual requirement. The demand for these services during

the ast few years has become very acute. The Department has been hard put to run the services with reasonable efficiency for the following reasons :—

(*a*) deterioration in equipment due to both excessive pressure and normal wear and tear during the war years and difficulty of replacement ;

(*b*) deterioration in the quality of the personnel ;

(*c*) heavy growth of traffic in all branches which has more than doubled itself during the last decade ; and

(*d*) consequences of Partition, which caused considerable dislocation.

90. Development in various sectors, private and public, under the Five Year Plan will throw an additional burden on the Department which will be called upon to provide communication services to an ever-increasing extent. The requirements of the communication system which include postal facilities, provision of adequate office building for posts and telegraphs offices, tele-communication development particularly in telephones, and modernising the posts and telegraphs workshops will have to be provided for.

Development Plans

91. One of the main pre-occupations of the Department is to extend communication facilities in the rural areas. During the last five years considerable progress has been achieved in this direction. About 35;000 new post offices were opened. The aim is to have a post office in every village with a population of 2000 or over. The Department expects to achieve this target by the end of 1953. But in a country predominently consisting of villages, rural facilities will have to be further improved and the programme will have to be continued. At the same time demand for increasing postal facilities in the urban areas will have to be met. To increase the efficiency in working, there is a programme of introducing mechanised devices on the lines of what obtains in some of the more advanced countries of the West.

92. Shortage of accommodation in the postal and telegraphs offices and the consequent congestion has become so serious that unless concerted measures are taken quickly the efficiency of the Department will go down rapidly. It has already been stated that the traffic has more than doubled itself during the last decade, while practically no new construction has taken place (*a*) to accommodate the additional operative staff engaged in handling the increased traffic, and (*b*) to meet the requirement of the public in the shape of larger counters, etc. A large proportion of post offices is accommodated in rented buildings. In view of the considerable urbanisation that has taken place during and after the last war, it has become difficult even to rent buildings to accommodate these offices. Existing rented buildings have proved inadequate for meeting the situation and in many cases landlords are eager to terminate the tenancy. Further, the interest of the services requires that the bulk of the operational staff should live near their place of duty. This makes it necessary for the Department to provide residential accommodation for them. The Department is, thus, faced with a large building programme, both in shape of posts and telegraphs offices as well as quarters for its staff.

93. The present telegraph network in India is comparatively meagre taking in o account the extensive area involved. The development Plan provides for the extension of tele-communication services to a larger number of centres. Modern mechanised methods in the handling

and transmission of telegraphs traffic are being introduced. They will greatly improve the efficiency of the services and also result in economy in running its expenditure. The most insistent demand for development is in the fields of telephones. India is very backward in this regard ; it is even more backward than, for instance, China. The number of telephone lines in the whole of India is less than that in one city of Australia, *viz.*, Sidney. There are long waiting lists in every city, big and small, for telephone connections. The development programme under the Five Year Plan whch will expand the economic acitivity all over the country will further swell these waiting lists. From the financial point of view the return on capital investment on the development of telephone facilities is substantial. For instance, at the end of the financial year of 1950-51 the capital investment in telephone and telegraph services amounted to about Rs. forty eight crores and the net profit in that year in the two branches, after deducting interest on capital as well as depreciation and other working expenses, was Rs. 4·61 crores which works out to a return of 9·6 per cent. If the interest charges at 2·3 per cent were added, the yield on capital invested amounted to 11·9 per cent. The yield on the capital devoted to telephone development is proportionately greater since a smaller amount of money is committed to "no profit" schemes, like providing strategic lines, railway circuit, communications to in accessible, places, etc.

94. The posts and telegraphs workshops in Bombay and Calcutta are located in the centre of the respective cities and their working in such a location is not conducive to economic production. They do not afford room for expansion which will become necessary almost immediately to meet the increasing demands of the Department. It will, therefore, be necessary to shift these workshops to more suitable localities as well as to modernise them so as to improve their efficiency.

95. The Plan provides an allotment of Rs. 50 crores for the development of the communication services including postal, telegraph, telephones and wireless communications.

The Railway Plan for 1951-56 (in crores of rupees)

Rehabilitation and Additions	1951-52 (Approximate Actuals)	1952-53 (Budget)	1953-56	1951-56 (Five years' Total)
Track	8·51	14·36	42·00	64·87
Bridges	0·85	1·15	3·60	5·60
Other structural and engineering works	7·89	8·52	27·00	43·41
Collieries	0·06	0·39	1·00	1·45
Ports	0·09	0·18	0·77	1·04
Rolling stock and machinery	36·91	42·55	128·50	207·96
Labour welfare—staff quarters and welfare works	4·55	4·54	15·00	24·09
Restorations	0·52	1·14	4·00	5·66
New lines				
Special projects				
Major bridges				
Electrification of track	6·55	5·97	16·00	28·52
Conversion of narrow gauge to metre or broad gauge				
Passenger amenities	2·47	3·00	9·53	15·00
Miscellaneous items, including probable savings	2·47	—2·70	2·63	2·40
TOTAL	70·87	79·10	250·03	400·00

8. BROADCASTING

The State of the Broadcasting Service

96. Prior to 1935, the Indian State Broadcasting Service operated with two mediumwave transmitters of 1·5 kw. power each in Bombay and Calcutta, and provided a broadcast coverage on the mediumwaves over 5,400 square miles serving a population of about 10 millions. In 1935, the organisation was renamed the All-India Radio. Since then a number of new stations both, mediumwave and shortwave, have been established in different parts of India. Immediately after Partition, there were in the Indian Union six stations which operated six mediumwave transmitters and four shortwave transmitters, excluding the high power shortwave transmitters in Delhi. The broadcast coverage provided by the mediumwave transmitters extended over 44,000 square miles serving a population of about 32·6 millions. The shortwave transmitters provided a second-grade service covering about the same area and catering to about the same population. The high power transmitters that had been brought into operation during the late war served to augment the internal service to some extent, besides providing a service to foreign countries. The broadcasting stations operated by the former Princely States were taken over by the Central Government and merged with the All-India Radio broadcasting system in April, 1950. The present broadcasting system in ndia consists of 21 stations, operating 30 mediumwave transmitters and 14 shortwave transmitters. The area covered on the mediumwaves is now about 117,000 square miles and the population served is about 80 millions.

Programme under the Five Year Plan

97. The programme includes installation of 50 kw. mediumwave transmitters, one each in Bombay, Bangalore, Ahmedabad, Allahabad and Jullunder; 10/20 kw. mediumwave transmitters one each in Madras, Indore and Hyderabad; 1 kw. mediumwave transmitter at Jaipur, Jodhpur, Gwalior and Rajkot; and 100 kw. shortwave transmitters one each at Madras, Bombay and Calcutta. In addition, new studio installations will be established in Calcutta and Madras and the existing installations will be provided with more facilities. The 5 kw. mediumwave transmitter now at Baroda will be shifted to Poona on the installation of a 50 kw. transmitter at Ahmedabad. It may be stated that a 50 kw. transmitter came into operation in Calcutta in January, 1951, shortly before the commencement of the period of the Plan.

98. The new installations which are proposed to be taken up under the Plan, will serve to increase the area under mediumwave broadcast coverage to 370,000 square miles. The population served is expected to increase to 170 millions. The programme will also augment considerably the national and international services on shortwaves. There is a provision of Rs. 3·52 crores in the Plan or development of broadcasting.

CHAPTER XXXII

HEALTH

Health is fundamental to national progress in any sphere. In terms of resources for economic development, nothing can be considered of higher importance than the health of the people which is a measure of their energy and capacity as well as of the potential of man-hours for productive work in relation to the total number of persons maintained by the nation. For the efficiency of industry and of agriculture, the health of the worker is an essential consideration.

2. Health is a positive state of well being in which the harmonious development of physical and mental capacities of the individual lead to the enjoyment of a rich and full life. It is not a negative state of mere absence of disease. Health further implies complete adjustment of the individual to his total environment, physical and social. Health involves primarily the application of medical science for the benefit of the individual and of society. But many other factors, social, economic and educational have an intimate bearing on the health of the community. Health is thus a vital part of a concurrent and integrated programme of development of all aspects of community life.

STATE OF PUBLIC HEALTH

3. Statistics of positive health are difficult to obtain. Information in regard to morbidity is available only to a limited extent. We have, therefore, to rely mainly on mortality statistics in assessing the state of public health. Compared with other countries, the expectation of life at birth in India is low as the following statement would indicate:

Country	Death rate per mille (1950)	Infantile mortality per 1000 live births	Expectation of life at birth		Year
			Males	Females	
			Negroes		
United States of America .	9·6	29	47·55	49·51	1920-21
			52·26	55·56	1939-41
			57·90	61·90	1947
			Whites		
			59·12	62·67	1929-31
			62·81	67·29	1939-41
			65·20	70·50	1947
England and Wales . .	11·6	30	51·50	55·35	1910-12
			55·62	59·58	1920-22
			58·74	62·88	1930-32
			66·39	71·15	1948
India	16·5	127	23·63	23·96	1891-1901
			22·59	23·31	1901-1911
			26·91	26·56	1921-1930
			32·09	31·37	1941
			32·45	31·66	1951

*Estimeted on in sufficient data.

Statistics relating to the expectation of life indicate a low level of health in the country because they express in terms of the average length of life the cumulative effect of the specific mortality rates at different ages in respect of the two sexes. The level of health as indicated by the death rate and the infantile mortality rate is low. The specially vulnerable groups in any community are children and women at the reproductive age groups and old people. Nearly 40 per cent of the total deaths are among children under 10 years of age and of the mortality in this age group half takes place within the first year of life. The percentage for England and Wales in every age group is very much smaller.

Deaths at specific age periods shown as percentage of total deaths at all ages : child mortality.

Country	Under 1 year	Percentage of total	1-5 years	Percentage of total	5-10 years	Percentage of total	Total deaths of all ages
India, 1949 .	8,30,270	20·5	6,39,616	15·8	2,28,265	5·6	40,44,425
England and Wales, 1949.	23,882	4·7	4,641	0·9	2,045	0·4	5,09,973

Maternal mortality is estimated to be 20 per thousand live-births which is a very high figure. About 2 lakhs maternal deaths occur annually. The morbidity resulting from causes associated with child bearing would run to about 20 times this figure or 4 millions. The average annual number of deaths in India during 1940-49 from epidemic diseases and certain groups of causes is shown below:—

	Mean 1940-49	Percentage of total deaths
Cholera	2,02,857	3·5
Smallpox	71,008	1·2
Plague	25,375	0·4
Fevers	33,13,146	57·5
Dysentery and diarrhoea	2,27,850	4·0
Respiratory diseases	4,15,345	7·2
All other causes	15,08,446	26·2
TOTAL	67,64,027	100·0

Epidemic diseases together account for 5·1 per cent of the total mortality. India continues to be the largest reservoir of these epidemic diseases. More than half the deaths are recorded under fevers by the reporting agency which has no means of proper diagnosis of the

cause of death. Respiratory diseases are numerically the next important group. There is a large prevalence of bowel disorders and parasitic infections. It is estimated that 100 million people suffer from malaria and the annual mortality is estimated at about 1 million. It is similarly estimated that about 2·5 million active cases of tuberculosis exist and about 500,000 deaths take place every year. The present low state of public health is reflected in the wide prevalence of disease and the high rate of mortality in the community as a whole and in particular among vulnerable groups such as children and women in their reproductive age period. A large part of this represents preventable mortality.

4. The output of the industrial worker in India is low compared with that of the worker in other counries. The productive capacity of the agricultural worker is comparatively low. The loss caused by morbidity in working time is enormous. To this must be added the expenditure to the individual and to the State in the provision of medical care.

Causes of Low State of Health

5. The causes of this low state of health are many. The lack of hygienic environment *Conducive* to healthful living, low resistance which is primarily due to lack of adequate diet and poor nutrition, lack of proper housing, safe water supply, proper removal of human wastes and the lack of medical care, curative and preventive, are some of the more important factors, besides lack of general and health education and low economic status. There are serious impediments to rapid progress. The country's financial resources are limited, trained personnel are lacking and the whole programme of health development is bound up with a broader programme of social improvement.

Personnel

6. One of the serious difficulties to be overcome is the shortage of personnel. This is clearly brought out in the following table :—

*The Proportion of Medical Personnel to Population****

Medical Personnel	India	United Kingdom
1 Doctor	6,300*	1,000
1 Nurse	43,000	300
1 Health visitor	4,00,000	4,710
1 Midwife	60,000	618
1 Dentist	3,00,000	2,700
1 Pharmacist	40,00,000	to 3 doctors.

*75 per cent. of doctors are in urban areas and their distribution in rural areas is very sparse.
***Report of the Health Survey and Development Committee.

Increased training facilities for all these types of personnel are a matter of vital importance. In many areas the use of sub-professional auxiliary personnel is clearly indicated as an approach to a solution of the problem. It is of the greatest importance that the work of sub-professional personnel should be guided and supervised by qualified persons.

Physical Facilities

7. "Curative medicine of an effective scientific type must rest on good hospital facilities as its basis and preventive medicine must depend in a large measure on out-patient services for the ambulant case and on centres for health promotion through individual instruction in the principles of personal hygiene." * The number of medical institutions at present available is far too small to provide a reasonable standard of medical service to the people, particularly in the rural areas. While there is a considerable disparity between the States in the ratio of institutions to population in respect of both urban and rural areas, the average for the country is one institution for 24,000 urban population and one for 50,000 rural population in 1949.

The ratio of bed accommodation available in these institutions is one bed for 3,135 of the population or 0·32 bed per thousand in 1949. "More hospital facilities are needed but the hospital services which do exist need to be developed in the most economical manner (consistent with high standards), intra-mural care needs to be correlated with clinical and home care, effective integration with the public health programme as a whole must be secured and hospitals must become health centres in the full sense of the term"*.

Priorities

8. In the circumstances, a programme with the following priorities may form the basis of the plan:—

(*i*) Provision of water-supply and sanitation.

(*ii*) Control of malaria.

(*iii*) Preventive health care of the rural population through health units and mobile units.

(*iv*) Health services for mothers and children.

(*v*) Education and training, and health education.

(*vi*) Self-sufficiency in drugs and equipment.

(*vii*) Family planning and population control.

Organisation and Administration

9. The pattern of development has been suggested by the Health Survey and Development Committee. It is to consist of peripheral primary health units catering to both preventive and curative care of the people with secondary health units and district units providing better and more complete facilities and supervision. The development of the primary and secondary health units is of the greatest importance in providing broad-based health services to the

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C.E.A.—The cost of Sickness and the Price of Health.

community. Such centres are proposed in connection with the community development projects contemplated under the T.C.A. programme. They provide water supply and sanitary improvements, personal health services, particularly for mothers and children and health education to the public so that they may participate in the programme of development. A progressive spread of these institutions son a countrywide scale in a given number of years would go a long way in meeting the health needs of our rural population. In addition, it is necessary to convert some of the existing dispensaries into primary health units by the addition of necessary bed accommodation and preventive health staff. A definite number of such dispensaries may be converted each year according to a well-laid programme. Mobile dispensaries will have to be associated with these rural health units in order to take medical care to the population. The mobile dispensaries can also be utilised for carrying specialist services to the rural population.

10. Though health is largely the responsibility of the States, the Central Government are responsible, among other subjects, for higher education and research. The Central Government have also the overall function of the development of health services in the country as a whole. In order to develop the closest co-operation between the Centre and the States a Central Health Council has been constituted with the Central Minister of Health as chairman and the Ministers of Health of the States as members. Measures have to be devised to meet the needs of certain States for trained and experienced personnel for teaching, research and administration. There is an insistent demand for ensuring adequate health services for the vast rural population of the country.

Medical and Public Health Programmes

11. The provision for the medical and public health plans of the Central and State Governments amounts to Rs. 99·55 crores of which the Centre's share is about Rs. 17·87 crores. Medical and public health measures being primarily States' subjects, the Central Government have limited their activities to higher education and research and aiding the State Governments in specific schemes such as control of malaria on a national scale. The following table gives the distribution of expenditure on medical and public health schemes in the plan:—

(Rupees in lakhs)

	Medical	Public health	Total
Central Government	565·23	1222·20	1787·43
Part 'A' States	3394·30	2956·00	6350·30
Part 'B' States	580·70	657·40	1238·10
Jammu and Kashmir	46·00	82·20	128·20
Part 'C' States	222·50	228·00	450·50
TOTAL	4808·73	5145·80	9954·53

The total amount of Rs. 99·55 crores shown above is not all that will be spent for medical and public health measures in the country. Local authorities in all the States are executing medical and public health programmes. International agencies like the W.H.O. and the U.N.I.C.E.F. are taking part in the development of medical and public health schemes in various parts of the country.

The total expenditure of the Central Government during 1950-51 was nearly Rs. 1 crore of which Rs. 7·5 lakhs has been reckoned as development expenditure. Though a number of schemes have been formulated in the past only very few of them and that too on a very modest scale could be taken up by the Central Government. This development expenditure of Rs. 7·5 lakhs is expected to be increased to an annual average of Rs. 3·57 crores during the next five years. The bulk of the plan is accounted for by (1) the All India Medical Institute, a central institution for higher research and post-graduate studies, estimated to cost Rs. 3·59 crores and (2) the National Malaria Scheme estimated to cost Rs. 10 crores. Though the malaria scheme is a Central scheme the beneficiaries will be the States.

In the medical plans of the States, Rs. 35·69 crores will be on Revenue account and Rs. 6·72 crores on Capital account. Of the amount of Rs. 42·41 crores to be spent on medical schemes, Rs. 33 crores will be on schemes in progress. But in the public health programme of the total expenditure of Rs. 39·23 crores Rs. 17 crores will be on schemes in progress, the balance on new schemes. This is mainly because a number of new items of water supply and drainage works is being undertaken in various States under the plan.

12. The following table gives the proportion of the increase contemplated under the plan on medical and public health expenditure in the States over that in 1950-51.

(Rupees in lakhs)

States	Medical			Public Health		
	Development expenditure 1950-51	Average annual expenditure in the Plan	Percentage of increase	Development expenditure 1950-51	Average annual expenditure in the Plan	Percentage of increase
Part 'A' .	525·31	678·86	29·2	316·57	591·2	86·9
Part 'B' .	78·66	116·14	47·9	51·48	131·4	55·4
Part 'C' .	1·48	44·52	2908·0	1·12	45·60	3970·0

The proportion of increase for both medical and public health for Part 'A' States appears comparatively low because the level of development expenditure in 1950-51 had already increased very considerably in the period 1946-47 to 1950-51 on account of the undertaking of post-war reconstruction schemes. Perhaps the small proportion for medical schemes in the case of Part 'B' States is also attributable to the level already attained in 1950-51 on account of the operation of the post-war reconstruction plans in States like Hyderabad, Mysore, Travancore & Cochin, Gwalior and Jaipur. The proportion appears phenomenal in the case of Part 'C' States because such services on a large scale are almost new fields of effort.

The comparatively larger proportion of increase contemplated under public health measures in all the States over that for medical programmes indicates the greater importance attached to public health measures by the State authorities. This shift in emphasis is in the right direction.

13. The following table indicates the expenditure on various categories of medical schemes undertaken by both the Central and State Governments (excluding Jammu and Kashmir State) as compared with the position obtaining in 1950-51 :—

(Rupees in lakhs)

	1950-51	5 years' total	Annual average
Administration	3·2	62·2	12·4
Education and training	235·2	1891·7	378·3
Hospitals and dispensaries	331·3	2486·7	497·4
Other schemes	43·3	322·1	64·5
	613·0	4762·7	952·5

Out of the total expenditure contemplated, more than 50 per cent will be on hospitals and dispensaries and nearly 40 per cent of the total provision will be for medical education and training. It will be seen from the table above that the proportion of the distribution of the total expenditure under the Plan amongst the various categories of schemes will be almost the same as that obtaining in 1950-51 as a majority of the schemes in the States' sector continues from 1950-51 onwards.

Schemes for medical education and training relate, in addition to the Central All-India Medical Institute, to the completion of the new medical colleges in Assam, at Poona, Ahmedabad and Baroda in Bombay, at Guntur and Madura in Madras, in Madhya Pradesh, West Bengal and Travancore-Cochin, expansion of existing medical schools and colleges and provision of training for auxiliary medical personnel like nurses, midwives, compounders, etc. The execution of the schemes is expected to increase the total number of personnel trained annually in the country during the period 1951-52 to 1955-56, as follows :—

Number trained	During 1950-51	Ending 1955-56	Percentage of increase
Doctors	2504	2782	11·1
Compounders	894	1621	81·3
Nurses	2212	3000	35·6
Midwives	1407	1932	37·3
Vaids and Hakims	914	1117	22·2

Schemes regarding hospitals and dispensaries relate to the construction of a few new hospitals and dispensaries, expansion of existing ones with increase in the number of beds, provincialisation of hospitals and dispensaries hitherto under non-government agencies and provision of mobile dispensaries for rural areas. The increase in the number of hospitals and dispensaries and the number of beds in them is anticipated to be as follows :—

	During 1950-51	By 1955-56	Percentage of increase
Number of hospitals	2014	2062	2·4
Number of dispensaries (urban) . . .	1358	1695	24·8
Number of dispensaries (rural) . . .	5229	5840	11·6
Number of beds in hospitals	106478	117222	10·1
Number of beds in dispensaries (urban) . .	2013	2233	11·4
Number of beds in dispensaries (rural) . .	5066	5582	10·2

Other schemes under the head relate to the opening of a number of T.B. clinics and sanatoria in almost all the States, opening of leprosy clinics and hospitals in a majority of States where the disease is prevalent and provision for the prevention and treatment of venereal diseases

14. The following table gives the expenditure on different categories of public health schemes undertaken by the Central and State Governments (excluding Jammu and Kashmir) as compared with such expenditure in 1950-51 :—

(Rupees in lakhs)

	1950-51	5 years' total	Annual average
Administration	15·6	210·8	42·2
Education	1·0	130·7	26·1
Water supply and drainage . . .	270·5	2334·4	466·9
Anti-malaria	45·4	1715·2	343·0
Other schemes	35·5	672·5	134·5
	268·0	5063·6	1012·7

It will be seen that water supply and drainage and anti-malaria schemes account for the bulk of the expenditure. The development expenditure in 1950-51 will increase by nearly four times every year in the plan period. The rate of annual expenditure on water supply and drainage will increase by more than 70 per cent and the rate of expenditure on anti-malaria operations will be increased by more than 750 per cent.

Under public health education, provision has been made in certain States for training of medical graduates in public health. training of health, visitors, sanitary inspectors, etc. The number of sanitary inspectors trained annually is expected to increase from 346 in 1950-51 to 450 by the end of 1955-56.

Water supply and drainage works under the public health plan comprise mostly measures for improving drinking water supply, the provision for urban and rural areas being Rs. 12·12 and Rs. 11·37 crores respectively. Madras and Bombay account for a major share of the programme.

Anti-malaria operations comprise expansion of the Central Malaria Institute, large-scale spraying of D. D. T. and distribution of anti-malaria drugs by the State Governments. The State Governments' activities would be augmented by large supplies of D.D.T. produced by the Central Government's D.D.T. plants to be established shortly and also the supplies of D.D.T. and anti-malarials from the United States of America under the Technical Co-operation Agreement.

Other schemes under the head relate to the establishment of primary health centres in some of the States, establishment of maternity and child welfare centres, the most important being the Central Government's scheme for child health care at Calcutta, and provision for nutrition research in certain States like Madras, Bombay, Uttar Pradesh and Assam. The Central Government are providing for a number of mobile health units in the rural areas of several Part 'C' States.

Environmental Hygiene

15. The provision of an environment conducive to healthful living is an essential requirement for the maintenance of public health. In countries where water supplies and waste disposal have been attended to cholera, typhoid fever and dysentery have almost disappeared and rare cases occur due to personal contact or food handling by healthy carriers. These measures have also their effect on the infant mortality rate and the intestinal parasitic infection rate. In India these problems largely remain to be solved.

Water Supply

16. The provision of a safe and adequate water supply is a basic requirement and should receive the highest priority. Though the provision of protected water supplies was started in India about the same time as in England and U.S.A., the progress made has been little. Only 6 per cent of the total number of towns in India have protected water supplies which serve 6·15 per cent of the total population or 48·5 per cent of the urban population. The position of the water supplies has deteriorated considerably in the larger towns. In the rural areas and small urban areas, the water supply continues to be unsatisfactory. The Environmental Hygiene Committee proposed a Five-Year Plan based on certain priorities like water scarcity, cholera endemicity, pilgrim centres, intensive development projects, etc. The scheme as suggested by the Committee would cost about Rs. 16·77 crores per annum.

17. The introduction of protected water supply alone will not be sufficient for achieving healthful living. It is also essential to adopt measures for the hygienic collection and disposal of community wastes. Only 23 cities out of 48 having a population of over 1 lakh have

sewerage systems. There are 12 other towns which are partially sewered. About 3 per cent of the total population is now served by sewerage systems. A five-year programme has been suggested by the Environmental Hygiene Committee. The total outlay required for this programme may be about Rs. 15 crores in five years.

18. While it has not been possible to make a provision on this scale in the plan, it would be seen that a substantial effort is being made by the States. Among Part 'A' States Bombay, Madras, West Bengal and Bihar, among Part 'B' States Rajasthan, Madhya Bharat, Mysore and Travancore-Cochin and among Part 'C' States Bhopal, Vindhya Pradesh, Himachal Pradesh and Manipur have devoted considerable sums for water suppply and drainage improvements. The five-year programme of water supply and drainage works of the States provides Rs. 23·49 crores.

Out of the total provision, Rs. 12·12 crores is for urban water supply and drainage and Rs. 11·37 crores for rural water supply. States have, as in the case of Madras, set up Commissions to determine priorities of water supply and drainage schemes over a long term and have made their five-year plans to fit in with such programmes. Governments help the local authorities to take up the schemes in the order of priority giving grants-in-aid and loans.

19. In rural areas, States aim at providing simple types of safe water supply for almost all villages within a certain period. In Madras, for example, a special fund with an initial contribution of Rs. one crore for the development of rural water supply has been constituted. The fund is supplemented by a grant of Rs. 15 lakhs annually. In the Five Year Plan of the Central Government there is a provision of Rs. 30·00 crores for local development loans for assisting local authorities. About Rs. 10·0 crores out of this may be assumed to be available for water supplies. Contribution by the people by way of voluntary labour or money will enable the provision to go a long way in the improvement of water supplies.

20. Just as in the case of rural water supplies, rural sanitation requires a special emphasis. Hardly 5 per cent of the houses have latrines. Simple types of latrines which require no special servicing have been found suitable. The State Governments can offer technical service and some inducement like supply of water-seal squatting slabs on a subsidised basis. The aim is to provide latrines in each house and only an absolute minimum in the way of public sanitary conveniences. The education of the individual in sanitary habits is deemed far more important.

21. A large part of the investment in water supplies and sewage systems will go towards the provision of pipes and the stepping up of production of materials required is one of the important considerations to be kept in mind.

22. For the implementation of the programme, it is essential to organise public health engineering services on a strong and sound basis in order to design, execute and maintain water supply and drainage works. All part 'A' States except Assam have a public health engineering organisation. Most of the part 'B' States also have a public health engineering set up, while part 'C' States have none. The services of a public health engineering consultant have been obtained from the United States of America for a period of one year by the Central Government.

NUTRITION

23. Nutrition is perhaps the most important single factor in the maintenance of health and resistance to disease. The state of nutrition has a direct bearing on the productive capacity of an individual. "Several studies carried out in different parts of the world give a direct correlation between calorie consumption and accomplishment of workers. There is reason to believe that both under-nutrition and malnutrition exist widely in the country."

24. The availability of cereals in 1950 was about 13·71 oz. per adult per day taking into account the internal production, imports and offtake from carry-over of stocks. The availability of gram and pulses was about 2·1 oz. per adult per day. Thus the availability of cereals as well as pulses was below the nutritional standards of 14 oz. and 3 oz. respectively. The plan aims at the production of 7·6 million tons of foodgrains with a view to make internal production self-sufficient in 1955-56. A satisfactory diet should include, in addition to foodgrains, adequate quantities of other foods such as milk, vegetables, fruits, meat, fish and eggs. The quantity of milk available has been estimated at about 5·5 oz. per adult per day, a quantity much below that necessary for adequate nutrition. The availability of fruits is about 1·5 oz. per day per adult, and vegetables about 1·3 oz. per adult per day, while the requirement is 3 oz. and 10 oz. respectively. They are very short of the requirement. Sugar at the rate of 1·6 oz. per adult per day is available while about 2 oz. is required. To raise consumption to the nutritional standard additional quantity required in 1955-56 is estimated at 2·2 million tons., about 0·7 million tons of which would be made up in the plan period. The availability of vegetable oil and ghee is of the order of not more than 1 oz. while 2 oz. is the actual requirement. As regards fish, roughly 0·3 oz. is available per adult per day whereas the requirement is 3 oz. The production of eggs, meat and fish is grossly inadequate and it is common knowledge that the intake of these foods by the majority of the population in most parts of the country is small or negligible. The existing food production data show clearly that the total food supply is insufficient in quantity and that the diet of the population as a whole is defective in quality since the protective foods which are needed to supplement the staple cereal grains are not produced in adequate amounts.

25. The results of diet surveys in India from 1935 to 1948 have been recently published. The conclusions reached are : "The Average diet of an Indian is lopsided primarily because of its extremely high cereal content. The other noticeable feature is that the diet lacks in adequate amounts of protective foods leading to inadequacy and very often to total lack of proteins of good quality. Inadequacy of minerals and most of the important vitamins in more or less varying degrees is the other important feature. It has not been sufficiently realised that the inadequacy of B group of vitamins is of the most serious import in view of the large intake of carbohydrates. Intake of vitamins A and C also is often inadequate". These surveys have led to the following observations: "It appears that two-thirds of the families did not consume any fruits and nuts at all. About one-third of the families did not consume sugar and jaggery r meat, fish or flesh foods, and a quarter of the family groups did not consume milk and milk products or leafy vegetables. Again, amongst the groups of families consuming particular foodstuffs the intake of leafy vegetables, other vegetables, ghee and vegetable oil and

pulses was below the desired or recommended level. Only in about one-fifth of the groups of families surveyed was the intake of pulses and other vegetables up to the recommended level. Though any generalisation on the data presented is not desirable for reasons more than one, yet it may be stated that in about four-fifths of the families surveyed the intake of protective foods was either nil or below standard".

26. The bulk of the population cannot afford to purchase a satisfactory diet. In terms of average income it would hardly be possible for more than 30 per cent of the population to feed themselves on an adequate scale.

27. A joint committee of the Indian Councils of Medical and Agricultural Research have suggested an integrated plan of human and animal nutrition in relation to agricultural production. They indicated the target requirements in 1956 as in the following table:—

Target Requirement for 300 Million Adult Units

Foodstuffs	Daily requirement oz.	Annual requirement in million tons.
Cereals	14	43
Pulses	3	9
Green leafy vegetables	4	12
Root vegetables	3	8
Other vegetables	3	9
Fruits	3	9
Milk	10	31
Sugar and Jaggery	2	6
Vegetable oil, ghee	2	6
Fish and meat	3	9
Egg	1 No.	109,500 million eggs.

They took into account the food requirements of the animal population for the production of milk, meat, for work animals, for the follower stock and for maintenance. Large gaps were found between the requirements and the available supplies. As it was found that the deficiencies could not be made up, a modified plan has been suggested on the basis of utilising maximum potentialities of cultivable acreage, scientific methods of increased crop production and a modified target of human requirements. The modifications in the daily requirements suggested are :—

Daily Requirement (oz.)

	Recommended	Attainable
Milk	10	(*a*) 10 oz. + what exists today for 20 per cent of the population (*i.e.* vulnerable group). (*b*) what exists today for the rest of the population.
Vegetable oil and ghee	2	1½
Meat	1	1 (for 55 per cent of population only)
Fish, Egg		Not considered.

28. There is no doubt that malnutrition occupies a very prominent position in the causation of high infantile, maternal and general mortality rates in India. Specific food deficiency diseases are in themselves a serious public health problem. In addition to well-recognised deficiency diseases, there are numerous other diseases in the causation of which nutritional factors are concerned. The general effect of malnutrition in lowering resistance to microbic and parasitic diseases must also be emphasised. Numerous investigations among school children in India have shown that a large percentage of children are in a poor state of nutrition with consequent impairment of physical and mental growth. Again in the adult population the ill effects of malnutrition are widely evident in the shape of low level of general health and reduced capacity for work. On the other hand, the striking improvement in the condition of Army recruits which takes place after a few months of abundant and satisfactory feeding is highly significant.

29. The creation of a nutritional section in the State public health departments is an essential first step in organising work. The prevention of deficiency diseases is an important responsibility of public health nutrition sections. It is the responsibility of public health departments to supervise through their maternity and child welfare services, feeding of mothers and infants. The development on a wide scale of school feeding schemes is strongly recommended. In all institutions where large-scale catering is done, the appointment of dietitians would be an important step. The education of specialised nutrition workers, workers in food trades and of the general public is very important.

The bulk of the provision under this head is from Bombay and Madras. The provision by the States is Rs. 11·9 lakhs.

30. The development and manufacture of synthetic vitamins in India is recommended. Similarly, improvements in the shark liver oil industry should be taken on hand and the possibility of manufacturing carotine preparations of high vitamin A activity from cheap and abundant vegetable resources should be investigated. The possibility of developing the production of food yeast is under examination. The processing of milk and fruits is of course of particular importance.

31. The widespread malpractices which affect the purity of food articles available in the market are an aspect of the food problem which should be attended to with vigour and a sense of urgency. The noxious substances which are often used as adulterants are doing insidious harm to the health of the people and the evil appears to be growing. This must be tackled on the footing of a principal priority both by the administration armed with adequate powers and the organised force of public opinion and social action. The Central Government have introduced a bill on the subject in the Parliament.

MALARIA

32. Malaria is the most important public health problem in India and its control should therefore, be assigned topmost priority in any national planning. It has been estimated that about a million deaths are caused in India every year by malaria among the 100 million

people who suffer from this disease. The economic loss is estimated at several hundred crores of rupees every year. Vast fertile areas remain fallow and natural resources remain unexploited largely due to the ravages of malaria. Aggregation of labour in irrigation, hydro-electric and industrial projects is attended with severe outbreaks of malaria if special steps are not taken for its control.

33. The use of D.D.T. as a residual insecticide has brought about far-reaching changes in the technique of the control of malaria and it has been successfully controlled with dividends several times the expenditure involved. The various Central and State projects and the Demonstration Projects of the W. H. O. and the U.N.I.C.E.F. have tackled only a fraction of the countrywide problem. It has not been possible to extend protection to the entire population in malarious areas due to lack of adequate finance, staff, equipment and supplies. So far only about 30 million out of the 200 million population exposed to malaria have benefited by the existing malaria control schemes. A comprehensive project for the nationwide control of malaria is now put forward.

34. The full malaria plan envisages a continuing programme consisting of co-ordination of all malaria control activities into the malaria control programme under the overall administration of the Central Government, strengthening of the existing malaria control programmes in the several States and establishment of malaria control programmes in the remaining States, providing malaria engineering consultation and other services to appropriate Central or State authorities concerned with development of irrigation, hydro-electric and other projects, extending training facilities and expanding the staff and facilities of the Malaria Institute of India to provide overall consultation and assistance to the States. The operational-programme is based on the use of insecticidal residual spraying measures applied in rural areas protecting 200 million people and treatment with anti-malaria drugs. These operations are to be carried out by 125 field malaria control teams organised and directed by the State Directorates of health services. The plan includes the construction of a D.D.T. plant to supplement the one already programmed by the Government of India with the W.H.O. and the U.N.I.C.E.F. assistance, in order to ensure sufficient supply of D.D.T. at reduced costs to meet the needs of the country. Financing of the project is to be the joint responsibility of the Central and State Governments. The amount of money spent annually by the State Governments on malaria control is approximately Rs. 1·41 crores. There is a vast disparity from State to State in the provision of funds for the control of this disease. The total provision made in the five year plan by the States is Rs. 7·04 crores. Madras, Bombay, Uttar Pradesh, Bengal and Mysore account for the bulk of the expenditure. The plan now proposed for nationwide malaria control would involve a commitment of Rs. 15 crores over a period of 3½ years. This would be followed by a maintenance programme the cost of which would be on a much lower level. The local expenditure by States for the period would amount roughly to Rs. 5·00 crores but the scheme involves an expenditure of Rs. 10·00 crores from the Central Government including aid from T.C.A. It is expected that with the supply of D.D.T. and equipment during the programme period, the States would be in a position steadily to expand their anti-malaria activities and would be further able to supplement the expenditure from the increased resources which the immense improvements in the economy of the country would provide, as a result of the introduction of the nationwide malaria control programme.

FILARIASIS

35. The disease is widely prevalent in India particularly in some of the coastal regions, with high humidity and moderately heavy rainfall. It also occurs, with a patchy distribution, in the moist and humid Gangetic valley and Bengal Basin, in the foothills of the eastern districts of Uttar Pradesh and Bihar, as also in parts of the Deccan plateau and Southern India. It is difficult to state the number of cases of Filarial infection in India, but it has been estimated that there are about 157 million cases in Asia, of which the quota for India may run into many millions. The predominant type of infection is caused by *W. bancrofti*. Less commonly, the infection is caused by *W. malayi*. In the case of the latter infection, the larvae of the Vector mosquito breed in association with aquatic plants and therefore the control measures would differ from those called for in the case of the other infections. In the case of *W. bancrofti* infections, the long-term control measure is the provision of efficient drainage. As a short-term measure D.D.T. spraying is indicated. The measures, therefore, can be carried out by the same organisation which is meant to tackle the malaria problem on a nationwide scale :

TUBERCULOSIS

36. Tuberculosis is a major public health problem next in importance only to malaria. While accurate data are not available, it is estimated that about 5,00,000 deaths occur every year and about 2½ million people suffer from active disease. It is estimated that about 900 to 1000 million man-days are lost. The economic loss is therefore incalculable. Besides, it causes a mass of human misery. Measures needed to combat tuberculosis may be classified as general and special. Measures directed towards the improvement of the standard of living come under general measures. These include improvement of nutrition, housing, sanitation—each involving very large-scale commitments. Under the special measures may be mentioned the provision of isolation and treatment of the sufferer and introduction of preventive measures. It is an extremely difficult problem to provide either the institutions or the staff needed on the standards obtaining in other countries. A minimum programme in the order of priorities would be :

(1) B.C.G. vaccination ;
(2) Clinics and domiciliary services ;
(3) Training and demonstration centres ;
(4) Beds for isolation and treatment ;
(5) After-care.

37. Emphasis has to be laid on preventive measures as these will yield the best return for the limited resources now available. Carefully tested experience in many countries over a period of 20 years shows that B.C.G. vaccination is an effective and safe preventive measure. The States should make this programme a part of their public health services. The Government of India have entered into an agreement with the U.N.I.C.E.F. and the W.H.O. to carry out a countrywide B.C.G. programme. It is estimated that if a mass B.C.G. campaign is worked out on the lines indicated it would be possible in a period of

about 15 to 20 years to reduce the mortality from tuberculosis to a fifth of its present level and the bed accommodation necessary for the isolation of cases could similarly be cut down to about a fifth of the total requirements. For the expenditure involved therefore, B.C.G. vaccination would give a very high return and considerable saving in the other control measures.

38. Among the institutions, we accord the highest priority to the clinics. The clinics will have to undertake preventive, diagnostic and curative functions. The clinics must have some beds at their disposal and also an adequate staff of doctors and health visitors to provide domiciliary services. Although it would be advisable to have one clinic for 1,00,000 of the population the effort in the next five years may be directed to the establishment of the clinics as special departments of teaching hospitals, district hospitals and other general hospitals, where X-ray and laboratory facilities exist.

39. The establishment of a certain number of model tuberculosis centres which will serve the purpose of teaching and demonstration is regarded as important because of the shortage of personnel for manning tuberculosis services. Each centre should consist of a clinic with attached beds and the clinic should provide fully comprehensive laboratory services and facilities for epidemiological investigation by mass radiography etc. in co-operation with X-ray departments. It is advisable to locate these centres in association with medical college hospitals. Three such centres are being established with international aid in Delhi, Trivandrum and Patna. It is suggested that similar centres may be established in Calcutta, Bombay, Madras, Punjab, Uttar Pradesh, Madhya Pradesh, Hyderabad, Mysore Madhya Bharat, etc.

40. The bed accommodation should be in the form of simply designed and cheaply constructed institutions. Priority of admissio should be given to those for whom domiciliary isolation or treatment is impossible. Non-official organisations should be encouraged to establish and run tuberculosis institutions and Governments should give them building and maintenance grants provided these institutions are run on non-profit basis.

41. Voluntary organisations should be stimulated to set up, with State aid, after-care colonies at suitable places in association with tuberculosis institutions.

42. For the proper development of tuberculosis control programmes, a special T.B. Adviser should be employed in each State.

43. It is estimated that a reasonable programme on the lines set out above would cost about Rs. 8·00 crores. Available resources limit the scope of the programme. However, the Centre and the States have made substantial provision and have shown considerable progress in their schemes. West Bengal has the highest provision followed by Bihar, Madhya Pradesh and Bombay. Among Part 'B' States Saurashtra has the highest provision and Mysore and Hyderabad come next. Among the Part 'C' States Delhi has a considerable

T.B. programme. The schemes, generally are concerned with the provision of sanatoria, hospitals and clinics, increase in the bed-strength and B.C.G. vaccination teams. Compared with 1950-51, the plan envisages an approximate increase by 1955-56, as shown in the following table :—

	1950-51		1955-56	
	Number of Institutions	Number of Beds	Number of Institutions	Number of Beds
Sanatoria	37	4,161	46	5,656
Hospitals	48	3,077	50	4,814
Clinics	127	2,323	180	2,562

The number of B.C.G. Teams is expected to increase from 73 in 1950-51 to 137 in 1955-56. The States' schemes would cost Rs. 3·80 crores and the central schemes Rs. 51·43 lakhs.

Venereal Diseases

44. The incidence of venereal diseases in India is unknown, though a rough survey made some years ago indicated a high incidence. Sufficient data now exist to suggest that in the large cities of India, particularly Bombay, Calcutta and Madras, venereal disease prevalence is high reaching 5 to 7 per cent of the population for syphilis alone. The problem in rural areas is not defined but the hill tracts extending from Kashmir to Assam (especially Kashmir, Kulu, Himachal Pradesh and Assam) appear to have an alarmingly high prevalence of syphilis. The importance of venereal disease from the point of view of producing sickness and incapacitation cannot be overemphasised. The measures for the control of these diseases are :—(1) the provision of medical care—preventive and curative ; and (2) social measures to discourage promiscuity and to control prostitution. The measures would include free and efficient treatment case finding and follow-up services, adequate diagnostic facilities, education and training of personnel and lastly the education of the people in regard to the spread and control of these diseases.

45. The creation of the post of a Provincial V.D. Control Officer with suitable assistance on the establishment of each Director of Health Services is necessary to plan the campaign against these diseases as part of the health administration. West Bengal and Himachal Pradesh have a full time V.D. Control Officer on the staff of the Directorate of Health Services. In Madras, the State Government have nominated the Lecturer in Venereology, General Hospital as consultant with the right of inspection of existing facilities in the State.

46. V.D. clinics with requisite staff should form part of the general health facilities provided in a district hospital. For the purpose of case finding and follow-up, it is essential to employ nurses, health visitors and social workers in connection with the V.D. clinics. For the period of the plan, it is proposed that each State should provide such clinics in the district

hospitals. For the treatment of patients necessary provision should be made for the purchase of anti-biotics in adequate quantity. The importation of penicillin in bulk and the projected penicillin plant are intended to answer this purpose.

47. Diagnostic facilities should be provided in the public health laboratories at the State headquarters, and in the regional and district laboratories. Such facilities should be made available free of charge not only to institutions but to all private practitioners. It is considered necessary to set up an advisory body to assist in ensuring comparable serological performance in the main laboratories of the country. The Indian Council of Medical Research may serve this function. It is also essential to provide standard antigen to State institutions as well as to private laboratories to maintain a high standard of technical performance. The Government of India have sanctioned an antigen production unit in collaboration with the W.H.O. and the U.N.I.C.E.F. The cost of the project is Rs. 72,000 for the production unit and Rs. 28,000 for the staff or a total of about Rs. 1 lakh.

48. The proposed extension of treatment facilities will be possible only when a sufficient number of doctors and other personnel have the necessary special training for the purpose. Such training should also be made available to private practitioners. These facilities may be organised as follows :—

(1) Training facilities in venereal diseases will be available in the upgraded V.D. department, General hospital, Madras. The Government of India have concluded an agreement with the W.H.O. for the upgrading of the V.D. Department of the Madras Medical College.

(2) Improvement in existing facilities may be considered at the following places where teaching and training activities are undertaken :—

(*a*) *Bombay*—J.J. Hospital—Venereal diseases department and Pathology department, Grant Medical College.

(*b*) *Delhi*—In connection with the All India Medical Institute.

(*c*) *Calcutta*—There is a combined scheme of the Government of India and the Government of West Bengal to utilise the existing resources of the V.D. department of the Medical College Hospital, the rural and urban health centre facilities of the All India Institute of Hygiene and public health, Calcutta, the clinics of the Government of West Bengal under their Director of Social Hygiene and the Serologist to the Government of India, Calcutta. The whole scheme is expected to cost Rs. 1·03 lakhs.

These training centres will train V.D. control officers who will take charge of the State V.D. programmes.

49. Education including sex education and provisions, legal and institutional, for the control of immoral traffic are important measures.

50. The V.D. schemes of the States and the Centre included in the Five Year Plan would cost Rs. 1·03 crores and Rs. 5·79 lakhs respectively. West Bengal is practically the only State with a comprehensive V.D. control scheme costing Rs. 84·30 lakhs.

51. Yaws is a non-venereal disease closely related to syphilis and amenable to the same treatment. It is known that Yaws is fairly widely prevalent in certain tracts of India, particularly among the tribal population in Madhya Pradesh, Madras, Hyderabad and Orissa States. A plan of operation has been agreed to by the State Governments and is awaiting the approval of the Government of India and the signing of an agreement with the W.H.O.

LEPROSY

52. It is estimated that the number of cases of leprosy in the country is probably at least one million. About one-fourth of a million may be lepromatous cases. The highly endemic areas of leprosy in India are certain parts of West Bengal, Orissa and of Madras and Travancore-Cochin. There is moderate incidence of the disease in the Himalayan foothills and Central India. The incidence of leprosy is remarkably small in the rest of the country. In highly endemic areas the incidence may range from 2 to 5 per cent of the population.

53. The existing anti-leprosy work is being carried out largely by voluntary organisations. The mission to lepers is the largest agency engaged in anti-leprosy work. Lately, State Governments and even local authorities have started the establishment of in-patient accommodation for leprosy. The total accommodation available is about 14,000 beds for the whole country. The Hind Kusht Niwaran Sangh has actively helped in carrying out anti-leprosy work. The Gandhi Memorial Trust has established a Leprosy Committee and taken up work in earnest. They have set apart a sum of Rs. 95 lakhs for combating the disease.

54. As a first step, it is necessary to carry out investigation of leprosy as a public health problem in local areas. Secondly, in those areas in which the prevalence of the disease is shown to be high, curative and preventive measures have to be organised and thirdly, there should be stimulation of voluntary effort and education of the public to secure their cooperation. To promote these objectives, special training at the under-graduate and post-graduate stages of medical education and facilities for leprosy research will have to be provided. The creation of a Central Leprosy Institute for post-graduate training and research has been included in the plan. It is essential that, as a preliminary step towards organising anti-leprosy work on sound lines, a leprosy organisation should be created at the headquarters of each State in which the disease is a definite public health problem. Provision for the isolation and treatment of all infectious cases is not possible with our present resources and efforts should be directed towards the provision of reasonable bed accommodation in institutions in heavily endemic areas for leprosy. Such accommodation is needed for the treatment of infective patients and for the remedial treatment of crippling and deformities. In considering any additional accommodation the recent advances in the treatment of leprosy

have to be taken into consideration. The introduction of sulphone drugs in the treatment of leprosy marks a distinct advance. It is possible with this treatment to have a comparatively quicker turnover and to continue treatment in the out-patient departments. We have to depend for the solution of the problem mostly on the organisation of clinics, from which treatment and preventive care of leprosy patients and their contacts has to be carried out. Children are much more susceptible to leprosy than others and every effort should be made during home visits by the doctors and others to impress this fact on the people and to secure that children are safeguarded. The clinics should be established in hospitals in areas in which the incidence of the disease is high. Attempts at group isolation of the rural colony type by voluntary efforts may be encouraged and voluntary efforts should be supported by definite provision of grants-in-aid. The schemes of the States and the Centre would cost Rs. 1·02 crores. West Bengal, Bombay, Madhya Pradesh and Bihar among Part 'A' States, Hyderabad and Mysore among Part 'B' States, Vindhya Pradesh and North-east Frontier Agencies among part 'C' States account for the bulk of the provision. The provision of Rs. 15 lakhs by the Centre relates to the Central Leprosy Institute.

CANCER

55. The incidence of malignant disease is much the same in India as in Western Europe and North America. The annual death rate from cancer in most countries varies from 100 to 150 per 1,00,000 living persons of either sex. 2,00,000 per year is a conservative estimate of cancer deaths in India. The death rate from cancer may probably go up in future with an increase in the proportion of population in older age groups. While the rate of incidence in various countries may show small differences, the incidence in various parts of the body is markedly different in different peoples. There is a greater frequency of oral cancer in Indians. Cancer of exposed portions of the skin is less common than in the fair-skinned people. Cancer of cervix uteri is much less common in certain communities in whom breast cancer is more common.

56. Early diagnosis and prompt treatment based on the knowledge at present at our disposal will definitely result in many cures. The detection of the early stages of the disease can be achieved by education of the public and better cancer education for the general medical profession. For the better understanding of the disease—the phenomenon of abnormal growth—its initiation, etiology, pathology, further development and treatment, persistent research appears to be the only solution. Cancer education and cancer research require considerable organisation and financial as well as moral support from the Government and the public.

57. Cancer education for the lay public may be organised jointly by the Indian Cancer Society, Indian Cancer Research Centre and cancer hospitals in the country. An efficient social service should be established where a group of trained social workers would work under the direction of an experienced research worker from the research centre. Efficient means of spreading knowledge about cancer to the public may be by the use of the radio, the film and the press, and by work in co-operation with existing organisations for social

services, women's societies, etc. Under cancer education for the medical profession, better attention should be paid to cancer education of under-graduate medical students ; refresher courses should be given to members of the medical profession of some standing and for well established scientists interested in cancer research. Another step would be to train fresh graduates who like to devote time to training in some phase of cancer work. A few traineeships should be made available for this purpose.

58. Cancer research may be divided broadly into (*i*) fundamental research in the laboratories, and (*ii*) applied or clinical research in the clinics. Integration of these two activities is very important. Clinical research would include the diagnosis of cancer, the treatment and cure of cancer, and clinical investigation on cancer patients. Fundamental research includes : (*a*) the biological and biochemical study of cancer cells, and (*b*) the etiology of cancer. Research on the above lines is in progress at the laboratories of the Indian Cancer Research Centre which is financed by the Central Government. However, for a proper carrying out of all the items enumerated, the research centre would require further financial help. At present the annual budget of this research centre is only Rs. 1,45,000. No national research institute in India can be expected to advance our knowledge and serve the whole country on a budget so small as that available to the Cancer Research Centre. The annual recurring grant to the Indian Cancer Research Centre would require to be increased by about Rs. 1·5 lakhs. The institute would also require a non-recurring grant for purchasing essential apparatus and equipment. This equipment may cost about Rs. 2 lakhs.

59. The different States could play a very important role by organising their activities, in association with their health services. The training of the personnel can be undertaken at the Tata Memorial Hospital with a small subsidy for scholarships to the trainees, partly from the Central and partly from the State Governments. The Tata Memorial Hospital and the Chittaranjan Hospital at Calcutta are the only two special institutions for cancer. The Women's Indian Association at Madras has been making vigorous attempts to start a cancer hospital in Madras and some assistance (Rs. 1,00,000) to them would appear desirable. The All India Cancer Association would also need some assistance (Rs. 50,000) to carry out its publicity work.

Mental Diseases

60. Although little information is available regarding the incidence of mental ill-health in the country, there is no doubt that mental disorder and mental deficiency are prevalent on a wide scale. The number of persons suffering from varying degrees of mental disorder who may not require hospitalization but should receive treatment and of those suffering from mental deficiency is likely to run into several millions. The existing provision for the medical care of such persons is altogether inadequate and unsatisfactory. Each State health administration, through its mental health organisation, should attempt collection of information. It is estimated that hospital accommodation should be available for 800,000 mental patients but the existing provision is a little over 10,000 beds for the country as a whole. Radical improvements are required in the existing mental hospitals in order to make them

conform to modern standards. Provision should also be made for all the methods of diagnosis and treatment. Apart from such remodelling of mental hospitals, the Central Government are upgrading two mental institutions, *viz.*, one in Bangalore and the other at Ranchi. The establishment of an All India Institute of Mental Health in association with the Bangalore Mental Hospital will involve an expenditure during the five year period of Rs. 9·7 lakhs non-recurring and Rs. 3·4 lakhs recurring. This expenditure is to be shared between the Central Government and the State Government of Mysore. There are hardly any psychiatric clinics. A beginning should be made in special and teaching hospitals and later extended to district hospitals. There are no facilities for training in psychological medicine in the country. It is necessary that a certain number of selected medical men with some experience of work in mental hospitals in India should be sent abroad for training.

61. The provision made by the various States and the Centre for mental hospitals is indicated below :—

(Rupees in lakhs)

State	Schemes	Expenditure 1951—56
Mysore	Mental Hospital, Bangalore	5·00
Saurashtra	Training in psychiatry	0·04
Ranchi	Mental Hospital, Ranchi	4·00
	TOTAL	9·04

MATERNITY AND CHILD HEALTH

62. Maternity and Child health is a service that is kept in the forefront in the planning of health programmes. The protection of the health of the expectant mother and her child is of the utmost importance for building a sound and healthy nation. The maternal mortality of India is very high and is estimated at 20 per thousand live births. Maternal morbidity is also very high being nearly 20 times the mortality. The infant mortality rate is of the order of 127 per thousand live births. The corresponding rates in progressive countries are very low and have been achieved by concentrated effort on the improvement of the health of the mother and child.

63. The lack of trained personnel like women doctors, health visitors, midwives, dais, etc., and of institutional facilities for training them add to the handicaps to provide an efficient service. The growth of maternity and child health work has been mainly through voluntary efforts and Governments and local authorities have taken it up only recently. Maternal and child health services should form an integral part of the general health services. Many of the States have developed the service in varying degrees, Madras, Uttar Pradesh, Bombay and West Bengal, leading. It is essential to have on the staff of each Director of Health Services a specially trained woman medical officer. At present it is understood

that only 9 States have got such organisation at the headquarters of the States. In a very few States, women doctors are employed in both urban and rural areas. The pattern of organisation for urban and rural areas may be considered separately.

64. While it is desirable to develop community centres which can cater to the needs of all members of a family and the whole community, such a development may not be possible except gradually. We have, therefore, to develop the ordinary type of maternity and child health centres. An adequate number of such centres properly equipped and staffed should be provided in all the urban health organisations. One centre with a minimum staff of one health visitor, 2 midwives, a peon and a part-time sweeper to serve a population of 10,000 is recommended. In addition, there should be a woman doctor preferably with post-graduate training in maternity and child health to be in charge of these centres. There is ordinarily overcrowding in practically all the maternity hospitals and the number of maternity beds should be increased to double its present strength in order to accommodate more delivery cases and to give post-natal care for a longer period. 10 per cent of the maternity beds should be reserved for ante-natal cases. It is also essential to reserve for children at least 10 per cent of the beds where there is no separate children's hospital with adequate number of beds. Ante-natal and post-natal clinics should form an essential feature of all hospitals with maternity beds. Provision should be made for day nurseries to look after infants and children of working mothers with the help of voluntary organisations or under the provisions of the Indian Factories Act. Private nursing homes established by doctors should be licensed.

65. In rural areas the present trend is to provide integrated curative and preventive health services and to organise them on the basis of health centres of different grades. There should be a unit for 10,000 to 12,000 population for efficient service. This will yield a total of 300 to 400 births a year. The maternity and child health staff in such a centre should be two midwives. A number of such primary centres would come under a higher unit for the Thana or Taluka. Here the staff for maternity and child health work should be a woman doctor and 2 health visitors. Their main functions would be training of dais, supervision of midwives and dais, care of maternity cases needing hospitalisation and conducting the clinics in the different peripheral units. One of the important activities of health units in intensive development areas like the community projects is the provision of adequate maternity and child health services, both in the primary centres and at the headquarters of the project areas in the secondary centres.

66. All doctors engaged in maternity and child health work should have training in this branch of preventive medicine for a period of at least three months, and must have done a house job in an obstetries department for at least six months. The practical training should cover both rural and urban fields. The period of field training will vary according to the total period the course covers. The department of maternity and child health of the All-India Institute of Hygiene and Public Health in Calcutta is to be expanded as a Centre for post-graduate training for maternity and child health doctors and for public health nurses with the aid of the U.N.I.C.E.F. Rural and urban training fields for nurses and midwives in the Delhi area and pediatric training centres in Madras, Bombay and Patna (Hyderabad is also under consideration) are being developed by Government with the W.H.O. and the U.N.I.C.E.F. assistance.

67. Voluntary organisations have played an important role in the past. They were responsible for starting the training of dais, midwives and health visitors. Voluntary bodies have also been responsible for the establishment and maintenance of a large number of maternity and child health centres. But the responsibility for providing such services rests upon the Government. The activities of the voluntary bodies should supplement the functions of Government. Government should have power of supervision and control to ensure that health activities of voluntary organisations are maintained at a satisfactory level and they should extend the fullest support to these organisations. The provision made by the various States for maternity and child health work is Rs. 1·35 crores and by the Centre Rs. 53·48 lakhs.

Health Education

68. All progress in public health depends ultimately on the willing assent and co-operation of the people and their active participation in measures intended for individual and community health protection. Considering how much illness is the result of ignorance of simple hygienic laws or indifference to their application in practice, no single measure is productive of greater returns in proportion to outlay than health education.

69. To be effective, health education should be addressed to the different sections of the public in a manner suitable to each. Women and children constitute the most important section. Educating the woman is educating the whole family. The formation of healthy habits in growing children in their formative years is most important. No agency is better equipped to reach this class and carry the message of health than the maternal and child health staff, the woman doctor, the public health nurse or health visitor, the midwife or the dai. The extension of this service on the widest scale is therefore of the greatest benefit. The school-going population is a large and important section. The most important thing in the primary schools is not so much the academic instruction but the inculcation of health habits. These cannot be fostered without minimum hygienic facilities in the school premises. The instruction in hygiene is graded to suit the class of pupil in the higher standards and project methods may be adopted. It is important to include the subject in teachers' training. Publicity may be addressed to the adult population in places of work, recreation or at home. Part of the educative work is intended for the professional class and those engaged in health work. They should be kept informed of what is happening in all progressive communities.

70. It is of the greatest importance that not only all available modern methods of publicity should be adopted but that they should be as attractive as possible and intelligible to the large section that are not literate. Audio-visual aids, the radio, the cinema, and the press should be extensively utilised. Television would come into use in due course. Gramaphone records, cinema films, film strips, lantern slides, picture posters, leaflets, book marks and picture cards should be produced and spread widely to the public in any attempt at effective publicity. The material prepared for imparting health knowledge to the people should draw upon all available sources, including the traditional practices and

Ayurvedic texts. Nature cure can furnish useful help for the maintenance and improvement of health and vitality. The testing and standardization of this scattared knowledge offers an important field for research. The provision of health museums in the Centre and in the States is an extremely important measure. These could produce useful publicity material as well as educate and entertain the public. The organisation of health exhibitions on all occasions when large congregations of people take place is very useful. Theatricals and variety entertainments can form part of interesting publicity campaigns.

71. To organise the work, it is essential to have health publicity bureaus in the Centre as well as the States. They should be properly staffed and equipped. It is of importance that they should have the aid of a good library service as well as a museum and units for the production of the requisite educational aids and materials. Health publicity should form an integral part of the district health organisations' work. Full advantage should also be taken of voluntary effort in this work. Several States have excellent organisations. The Centre has a scheme which includes in its scope the establishment of a health publicity bureau and facilities for the production of health educational material (film strip production unit and printing unit) at an estimated cost of Rs. 15 lakhs.

Medical Education, Medical Research and Medical Relief

72. Medical education, medical research and medical relief are intimately interconnected. It is generally accepted that the quality of medical relief is vastly improved by the presence of a teaching hospital and college in any area and again the quality of medical education improves greatly in an atmosphere of medical research. It is, therefore, obvious that the planning of these activities should be taken up together. Pointed attention has been drawn to the extreme shortage of all types of health personnel like doctors, dentists, nurses, health visitors, pharmacists etc. Top priority has, therefore, to be given to the training of health personnel in order to develop a reasonable health service in the country.

73. There are at present 30 medical colleges training candidates for the M.B.B.S. degree. There are also 4 medical schools for the training of licentiates. It is expected that these would be upgraded into colleges. Only one uniform minimum standard of training and qualifications prescribed by the Indian Medical Council should be adopted throughout the country. All the medical colleges provide for the admission of 2,500 students annually and nearly 1,600 qualifid doctors pass out a year. It is suggested that the training facilities should be extended so that at the end of 5 years there may be provision for 4,000 admissions in the medical colleges. New medical colleges should be established where large hospitals exist to minimise the cost.

74. There is considerable dearth of teaching personnel even in the existing medical colleges, particularly in non-clinical subjects. These posts should be made more attractive. It is suggested that whole-time teaching units may be established in medicine, surgery and midwifery. The officer in charge of a whole-time unit will devote all his time to the organisation of teaching and research work in his subject. It is understood that the Indian Medical

Council is contemplating the introduction of a system of compulsory internship in the medical course leading to the degree of M.B.B.S. It is recommended that certain selected hospitals in the States may be upgraded so that they can be utilised for this purpose. Throughout the course of instruction in the medical colleges, it is necessary that emphasis should be laid on the importance of preventive and social aspects of medicine and rural health. For this purpose the following steps would be necessary :—

1. Strengthening the preventive and social medicine departments in the medical colleges ;
2. The provision of urban and rural health units to give the students experience of these aspects of medicine ;
3. A definite period of internship in the health units.

Although most of the universities with medical faculties have instituted post-graduate degrees and diplomas, existing facilities are neither adequate nor of the required standard. The establishment of an All-India Medical Institute is for providing adequate facilities in this field. It is at the same time considered necessary to upgrade certain departments of existing medical colleges and institutions for post-graduate teaching and research. For standardising and co-ordinating post-graduate medical training Government of India have instituted an All-India Council of post-graduate medical education.

75. Practically all the teaching hospitals in the country impart training in nursing. A college of nursing for the purpose of giving training of the University standard has been opened in Delhi. There is a similar college in Vellore. Public health nursing is specially included in the instruction imparted in the B.Sc. course in the two nursing colleges. The department of maternity and child health of the All-India Institute of Hygiene and Public Health in Calcutta will also be a centre for the training of public health nurses. It should be possible to train a larger number of nurses than is done at present even in the existing teaching institutions. The deficiency can be overcome if a larger number of probationers are admitted to the training schools attached to the teaching hospitals. The number should at least be doubled. Larger number of sister tutors should be employed not only in the teaching hospitals but also in other hospitals where probationer nurses are trained. Increased facilities for the training of auxiliary nurses will greatly help in building up the personnel required. The community projects that are to be started immediately will call for a large number of personnel of this type. The expansion of maternal and child health services in the rest of the areas outside the community projects, even on a modest scale, would require very considerable numbers. The usual courses of training will take up a considerable time and short-term courses would therefore appear to be the only solution. Besides, persons with requisite, preliminary educational qualifications may not be coming up in sufficient numbers to meet the demand and the auxiliary courses where the preliminary educational qualification required is less than for the normal courses would facilitate recruitment of sufficient number of candidates. It may not be possible for the Government alone to deal with the question fully. Non-governmental agencies may therefore be invited to take up this work and adequate assistance given to them for running these short-term courses. In

view of the urgency of finding personnel for various development schemes, the training of ancillary personnel of this type should receive very high priority. A beginning has been made by a voluntary organisation in Madras with the aid of the public, the State and the Central Government. This type of activity may be taken up by other States.

76. There are training schools for health visitors in Delhi, Lucknow, Calcutta, Madras, Poona, Bombay, Nagpur, Hyderabad, etc. The conditions of training vary greatly in these institutions. In the training of health visitors and in the training of public health nurses provision should be made for instruction in subjects such as tuberculosis, etc. The opinion is gaining ground that as far as possible in future health visitors should be trained public health nurses.

77. The training facilities for midwives have to be considerably expanded. Each of the existing institutions with maternity beds can take in larger numbers of trainees. The training of auxiliary midwives would be a contribution to the solution of this question. Domiciliary midwifery should form an important part of the training of midwives. The training of indigenous dais has also been attempted in certain States. Under proper supervision the local trained dais may turn out satisfactory.

78. Facilities should also be provided for the training of medical social workers.

79. Public health engineering is a very important aspect of public health. It has not received due consideration so far in teaching centes in India. The All India Institute of Hygiene and Public Health has been giving training to qualified engineers in sanitary engineering as a post-graduate course. The course in this institution trains the candidates for the degree of Master of Engineering in public health given by the Calcutta University. Similar facilities should be provided in other States as well.

80. The bulk of the health personnel in a State is composed of qualified sanitary inspectors. There is need for standardizing this course. There is also an obvious need for the training of a larger number of Sanitary Inspectors.

81. There should be a specific allocation of funds both from the Central revenues and from the State revenues for medical research in the country. This money should be spent in the research institutes and medical colleges. The various departments in the medical colleges should be encouraged to take up research work in addition to their routine teaching duties. Adequate staff should be provided for this purpose. The creation of full-time units in medicine, surgery and midwifery will facilitate research work in those departments. Necessary technical assistance and equipment should be provided in non-clinical departments to participate in such programmes. Both for purposes of teaching and research in medicine an up-to-date library with sufficient number of journals and books is imperative. The history of medicine should be taught and a chair should be instituted in every university with a medical faculty. The research institutes, Central and State, will be concerned in the carrying out of researches in special subjects and investigations into the social and environmental factors affecting health and disease. We suggest the provision of improved laboratory

services in the different States, through the creation of regional laboratories to be linked locally with other organisations in connection with the health programmes and for technical direction with the central laboratory at the headquarters of the State. The Indian Council of Medical Research initiates programmes of research in several fields on urgent problems facing the country. It also creates a nucleus of trained research workers. The recruitment, training and utilisation of research workers has been a problem of some importance in this country. Fellowships are offered by various international bodies, by Governments of several countries, as well as the Government of India and the Indian Council of Medical Research and a well-considered plan is necessary in order to take the fullest advantage of the scheme. It should consider the requirements of :

(1) Teaching institutions ;

(2) The research institutions maintained by the Central and State Governments ;

(3) Research units and research schemes of the Indian Council of Medical Research.

The fellows should be ultimately assured of absorption in the services. There should be a survey of such needs and a tabulation of the programme of fellowships for a definite period. There should also be a follow-up to ensure that the fellows are employed for the purpose for which they are trained. The Central Government have provided Rs. 57·05 lakhs for research.

82. The Central Government have provided for the establishment of an All India Medical Institute, including a dental college, upgrading the existing departments of medical colleges, Lady Hardinge Medical College, College of Nursing, establishment of departments of social and preventive medicine in certain medical colleges, increased training facilities for nurses, nursing home and training centre for auxiliary nurses and midwives at Madras and Lady Reading Health School. Central expenditure is Rs. 5·13 crores on medical and Rs. 86·99 lakhs on public health education and training. The States have included schemes under education and training to the extent of Rs. 13·79 crores (medical) and Rs. 44·53 lakhs (public health).

83. The States have a programme of improved medical relief by the expansion of existing institutions and the provision of new institutions. The provincialisation of existing dispensaries, provincialisation and improvement of the thana or taluk hospitals, the expansion of district hospitals and of teaching hospitals at the headquarters of the State or other important centres constitute the components of this expansion programme. The greatest emphasis should be on rural health and the development of primary health units. The States and the Centre provide Rs. 24·10 crores and Rs. 52·2 lakhs respectively.

Indigenous Systems of Medicine

84. A great deal of uncertainty exists about the position and the future course of development of indigenous systems, homoeopathy and nature cure. It is desirable that this should be cleared up as early as possible. The controversy with regard to the truth and merits of any particular technique of cure or approach to the problems of health and disease

can only be settled on the touchstone of research. Scientifically conducted investigations will, in course of time, decide the value and validity of the different techniques and those which can justify their existence will necessarily become branches of an integrated system of medicine. In the five year plan a provision of Rs. 37·5 lakhs has been made for research into indigenous and other systems. Government of India have sanctioned a central institute for research in indigenous systems of medicine at Jamnagar. It is considered necessary, however, to promote research at more than one such centre, particularly at places where plenty of clinical material and high standard of professional talent are available. Provision has to be made specially for a comparative clinical study of different techniques. A nucleus for this purpose already exists in Bombay and has the support of eminent representatives of the various systems. Steps should be taken to strengthen and expand this institution. Besides assessment of the area of utility of these systems, there is a large scope for research in order to improve and enlarge their special contribution to medical science, to define, interpret and standardise the content of their theory and practice and to bring them in line with modern scientific advances. Research into all aspects of indigenous systems including drugs, principles and practices should be fostered not only in institutions devoted to the study of indigenous systems but also in modern medical institutions.

85. It is essential to make adequate arrangements for a systematic investigation into Indian medical herbs, from the point of view of identification, nomenclature, the area in which they are available and those localities in which individual herbs can be grown to the best advantage. It is recommended that, following this study, museums should be established centrally and regionally so as to enable students and practitioners of Ayurveda and other systems of indigenous medicine and Homoeopathy, to have access to all the information regarding these herbs. Early action is also needed regarding the collection, standardisation, storage and distribution of Indian medical herbs. Studies regarding these should be undertaken jointly by the Central Institute for Ayurvedic Research and by the Central Drugs Research Institute at Lucknow. Central agencies will have to be created for the purpose of co-ordination and direction of research which should be mainly in the hands of experts of the systems concerned.

86. Professional training for the practice of the indigenous systems is an important matter for consideration. The present approach to the education in Ayurveda has not produced satisfactory results. There is no uniform basis for the curricula adopted in different institutions. There is much room also for improving the quality of the teaching staff and the terms of its employment. The introduction of honorary teaching may help to draw the best elements in Ayurveda for assisting the educational work. A curriculum drawn up for the purpose has to be designed primarily to enable the student to attain full proficiency in the practice of the particular system. But he cannot afford to ignore the body of medical knowledge which has grown up under the impetus of scientific methods. As has been well expressed, "it is not necessary that he should be able to apply these technical procedures himself at all times, particularly in surgical specialities, but it is essential that he should have the knowledge which will enable him to recognise the need for calling in the aid of these specialities in the interests of his patients". The details of the curriculum which can satisfy both these conditions will

have to be worked out with the help of the results of research and experience. It is evident that the Ayurvedic portion of the curriculum has to be considerably strengthened and enlarged under the direction of experts in this field. The minimum qualification for admission should include the equipment needed for acquiring a mastery of Ayurveda in addition to a knowledge of the basic sciences as the essential foundation of medical education. Early steps will have to be taken for upgrading of selected institutions. At least one of them should be fully equipped for high level research as well as education of the requisite standard. The consensus of opinion seems to be in favour of a full course extending over a period of five years. There is also demand for a three years junior diploma course to meet the immediate needs of the country. This, however, needs examination in view of a large body of opinion in favour of a single course of training. Besides the State Medical Boards appointed for the purpose of regulating registration and practice in these systems, which should also deal with the standards of education, with supervision over instruction and with professional conduct in the respective systems, Central Councils may be necessary. Rs. 95·23 lakhs have been provided for education and training in indigenous systems of medicine, and Rs. 1·96 crores, for hospitals and dispensaries as well as other schemes of indigenous medicine by the States. Uttar Pradesh and Hyderabad have provided the maximum for hospitals and dispensaries. Bihar, Madhya Pradesh, Saurashtra and Travancore-Cochin devote considerable amounts for education and training, and account for the bulk of the expenditure of the States.

87. With regard to Homoeopathy, the proposals of the representatives of the profession appear to be reasonable and are, in the main, as follows:—

(1) A Central Council of Homoeopathic Medicine may be formed.

(2) Suitable colleges among the existing ones may be up-graded and standardised, and the question of starting new institutions may also be considered.

(3) The course in the colleges may be common during the first two years and students will then learn homoeopathic philosophy, materia medica and therapeutics and allied subjects in 3 years.

(4) Facilities for homoeopathic research may be provided.

(5) A Central homoeopathic drug manufactory and laboratory for standardisation of drugs may be opened at Lucknow.

88. The significance of what goes by the name of nature cure can be better appreciated if it is considered as a way of life rather than a system of treatment in the narrow sense. Its emphasis on positive health, conservation of vitality, self-help in matters of health and its advocacy of simple ways of using the varied forces of nature are elements of its special outlook. Many of its techniques have become assimilated in the general practice of medicine and it has much common ground with what has come to be known as physical medicine. Nature cure is being practised in India both as a basic system embodying the simple approach made popular by Mahatma Gandhi and as a modern system, for which it is claimed that it is based on the fundamental curative principles which are inherent within

the human personality. In dealing with the question of nature cure, we have to reckon with several viewpoints. It is contended that nature cure does not exist as an independent system. On the other hand, there is a school of thought which regards nature cure as self-sufficient, but so simple that it requires no elaborate provision for training or treatment. The practitioners of the modern system of nature cure insist, however, that it is a wide and vast field and it is necessary to create at least one central teaching institution in which the existing knowledge of the subject is standardized, research is carried on and instruction imparted to students. It appears, therefore, that these and several other aspects of the question require further enquiry. Immediate action in respect of nature cure may take the following lines:—

1. Nature cure should be included in the scope of research and steps should be taken for standardising the knowledge on the subject.
2. The possibility of including the teaching of physical medicine in the All-India Medical Institute should be explored and facilities provided for education in such treatment as confirmed by research and experience.
3. Facilities should be provided for the wide dissemination of the principles of nature cure, as confirmed by research and experience.

Drugs and Medical requisites

89. The supply of therapeutic substances and medical appliances ranks very high among the priorities in the national health plan. The carrying out of medical and health programmes will be made impossible without adequate supplies of drugs and appliances. It should be possible adequately to provide for these essential needs through a combination of private enterprise suitably assisted where necessary, and production by the State where this is found to be in public interest. The final responsibility should rest with the Government for seeing that the essential needs of the country in respect of important medical requisites are met satisfactorily in regard to quality, quantity and price.

90. Under the Drugs Act of 1940 the responsibility of the Centre is to regulate the standard of drugs imported into the country and the establishment of the Central Drugs Laboratory and also to correlate the work of administering the Act in the States, the States being responsible for control over manufacture, sale and distribution of drugs. The implementation of the Act has reached various stages in the States. Bombay, Uttar Pradesh, Madras and West Bengal have shown greater progress than others. The provisions of the Drugs Act have been extended to Part 'B' and Part 'C' States. All the States should effectively implement the provisions of the Drugs Act by the employment of an adequate number of qualified Drug Inspectors and the establishment of well-equipped laboratories staffed by qualified analysts. Black-marketing in drugs is checked by test purchases and regular collection of information on the supply position of essential drugs from the States. Government also propose to enhance penalties for manufacturing and selling spurious and sub-standard drugs. Such offences will be made cognisable.

91. This country has long been recognised as a rich store house of vegetable materia medica. Though indigenous drugs have been in extensive use, there has been no co-ordinated effort in research and standardisation of these drugs. It is necessary to lay down standards as regards quality and active principles. Then they should be processed in a form suitable for administration. Remedies suitable for adoption in the pharmacopoeia should be discovered. In order to achieve these objectives, the Indian Council of Agricultural Research has established a Medicinal Plants Committee to develop the cultivation of important medicinal plants at suitable centres. Uttar Pradesh and Kashmir are also taking steps in this direction. The Ministry of Health has established a pharmacognosy section of the Central Drugs Research Laboratory for the identification of indigenous drugs, and for detecting adulteration of crude drugs in the market. Samples of fifty commonly used drugs collected from markets all over India have been investigated in the Drugs Research Laboratory in Kashmir and found to be spurious imitations of the genuine commodities. As a preliminary to the control of these drugs, their pharmacognostic and chemical standards should be established. The Council of Scientific and Industrial Research has established a Drug Research Institute at Lucknow. This Institute will investigate many of the commonly used indigenous drugs to work out their active principles and standards of potency and purity. The need for a national pharmacopoeia has been a long-felt want. The Government of India established a committee for the preparation of the pharmacopoeia. The pharmacopoeia will contain monographs not only on modern synthetic and other drugs but also on all vegetable drugs of indigenous origin. So far nearly a thousand draft monographs have been prepared.

92. Homoeopathic medicines are not prepared according to well-known pharmacopoeial methods. Moreover, these drugs are used in such diluted forms that they cannot be tested or standardised by any known chemical process. The only precaution that could be taken is to allow the manufacture and preparation in bonded laboratories under the supervision of qualified Homoeopaths.

93. The Pharmacy Act has been enforced in all Part ' A ' States. Steps are being taken to enforce it in Part ' B ' and Part ' C ' States. Registration tribunals have been constituted by the State Governments and registration of pharmacists is under way. Educational regulations prescribing the minimum standards for pharmacists have been prepared. The Pharmacy Act should be effectively implemented in all States.

94. Private enterprise in drug manufacture in India started just after the World War I, though a beginning was made nearly 50 years ago. At the beginning of World War II, owing to restriction on imports the full resources of the country had to be developed. The Government of India gave all help to the manufacturing industry. Today India is self-sufficient in regard to all the galenical preparations, most of sera and vaccines, liver extracts, alkaloids like morphine, codeine, strychnine, etc. India is also self-sufficient in regard to the production of santonine, belladonna, digitalis and hyoscyamus preparations. India has made little or no progress in regard to production of basic chemicals required for the manufacture of synthetic remedies and chemo-therapeutic compounds largely used in the country. A few synthetic drugs are produced in small quantities, *e.g.* P.A.S., Novitrone, Luminal

(Phenobarbitone), Para-acetylamino benzaldehyde thio semi-carbazone etc., which meets only a fraction of the demand. India imports essential drugs and raw materials valued at over Rs. 10 crores annually. Among them are principally penicillin, streptomycin and other antibiotics, sulpha drugs, gland products, vitamins, anti-leprosy drugs and insecticides. These are the most important items and if steps are taken to implement the production of the basic chemicals and raw materials required for these and for the production of the finished products, the import of drugs will be considerably curtailed and India will be fairly on the way to self-sufficiency. We may now consider the production of those drugs to which a high priority should be assigned.

95. West Bengal and Madras produce about 1,00,000 lbs. of quinine per year. The production should be expanded to 1,50,000 lbs. to make up the gap between production and consumption. Government have appointed a special Cinchona Committee for the purpose of investigating the problems of Cinchona industry. Their report is expected shortly. Any enterprise proposing to produce synthetic anti-malarial drugs in the country should be given all facilities. The production of D.D.T. at rates comparable to foreign prices to the extent of about 5 or 6 thousand tons should be the target for the plan period. There is a proposal under way for the setting up of a D.D.T. factory, with the assistance of the W.H.O. and the U.N.I.C.E.F., for the production of 700 tons with capacity for expansion upto 1,400 tons. The setting up of another plant of the same capacity is essential to meet the requirements of a national malaria control programme and the target of production indicated. This is proposed under the T.C.A. programme.

96. Very nearly 35 per cent of the total value of imported drugs is in the form of antibiotics consisting of penicillin and streptomycin. The estimated consumption of penicillin is 8 million mega units per annum, which is wholly imported. The Indian Penicillin Committee have started a bottling plant at the Haffkine Institute, Bombay, where penicillin is imported in bulk. Government of India have entered into an agreement with the U.N.I.C.E.F. to set up a factory for the manufacture of penicillin and other antibiotics. The total cost of the project is estimated at Rs. 2·00 crores. The plant will be located at Pimpri near Poona. The production of penicillin at the rate of 4,00,000 mega units per month is expected by the end of 1954. Provision has also been made for the development of an important centre of research and training in the antibiotic field. Certain commercial firms are also engaged in importing penicillin in bulk and bottling it.

97. Sulpha drugs should have a high place in the priorities for self-sufficiency. The volume of their requirements is very large. Private enterprise is entering the field for the production of sulpha drugs.

98. Diaminodiphenyl sulphone is being manufactured by some Indian firms. It is claimed that a process has been evolved by which the cost of production would be considerably reduced. The basic materials required for the preparation of this drug are said to be all available in India.

99. Among the glandular products, insulin takes rank as one of the most important, as it is necessary for the treatment of diabetes. It is now wholly imported. It is understood that an Indian firm has under consideration a project for manufacturing insulin with foreign technical assistance.

100. The need for the development of industries for the production of vitamins, food yeast, shark-liver oil has been stressed in the section on nutrition. There is a need for a co-ordinated programme of development of the pharmaceutical industry. Production of hospital equipment, surgical instruments, and dressings, and glass containers should receive attention and necessary aid.

VITAL STATISTICS

101. Vital statistics constitute the foundation on which all constructive work in the field of public health must be built. Preventive and curative work can be organised on a sound basis only on accurate knowledge of mortality and morbidity statistics. The application of modern statistical methods to health administration is of supreme importance. It is necessary both for ensuring the collection of data on sound lines and a study and interpretation of the recorded statistics. Investigation of socio-economic factors in relation to community health and disease, the survey of health problems and the evaluation of the measures taken require the application of statistical methods. An adequate statistical service is required for the collection and compilation of vital and population statistics and the census.

102. The collection and compilation of vital statistical data are defective in completeness and accuracy. The agency for the collection of vital statistics in municipalities is a part of the municipal public health department. As regards rural areas the agency varies in different States. The recorded vital statistics are passed on through a series of officers to the Director of Public Health and compilation of the data is carried out at different stages of transmission in most cases. The collection and compilation of vital statistics is now to be a function of the Registrar General and Census Commissioner. The Registrar General has reviewed the recommendations of the Bhore Committee and the Vital Statistics Committee and has proposed a scheme. The scheme consists of an annual review of population records and annual census of sample house-holds. The data collected by these two operations and those yielded by the normal registration of births and deaths are to be centrally compiled, tabulated and studied and on the basis of such studies population reports are to be prepared and published every year. The organisation required for this purpose would consist of a central office of the census of India under a Registrar General and ex-officio Census Commissioner, branch offices of the Census of India each under a Superintendent of Census Operations and agencies of each State Government *viz.*, a Director of Population Records for each State with necessary office staff and an organisation in each district consisting of chief Registration Officers, Registration Supervisors, Registrars and Additional Registrars, all appointed on an ex-officio basis. House to house visits and enquiries are proposed to be organised annually in order to effect 'Rotational Revision of the National Register' and the 'Annual Census of Sample House-holds'.

The expenditure incurred is to be shared equally between the Centre and the State concerned. The tota lcost of the entire scheme can be limited to Rs. 30 lakhs per annum.

103. Though the Registrar General is to be in charge of the vital statistical organisation, the health organisations have an important role to play, particularly through health personnel at district and local levels in providing accurate data of births and causes of deaths and in introducing the use of more exact terminology in reporting them. The health directorates at the Centre as well as in the States have got a distinct need for a statistical organisation to carry out certain types of statistical studies and investigations having a direct bearing on essential health problems with which they are concerned, besides the study and analysis of recorded statistics in medical institutions of various types and of health departments.

104. The application of statistical methodology to problems of health administration is a highly specialised scientific discipline and requires the services of highly qualified and well-trained statisticians. There is, therefore, a need for organising facilities for statistical training in universities not only in the theory of statistics but also in applied statistics in various specialised fields. So far as health statistics go, there is provision in the All-India Institute of Hygiene for such training. There is clearly a need for developing similar provision in other centres like the All-India Medical Institute. The satisfactory fulfilment of the functions of the Bureau of Health Statistics in the Directorates of Health Services would need modern mechanical aids. A provision of Rs. 9·25 lakhs for the purpose is made in the plan. Experimental pilot studies for the improvement of vital and health statistical data will be taken up along with population studies for which provision is made.

Family Planning

105. The recent increase in the population of India and the pressure exercised on the limited resources of the country have brought to the forefront the urgency of the problem of family planning and population control. The application of medical knowledge and social care has lowered the death-rate, while the birth-rate remains fairly constant. This has led to the rapid increase in the growth of population. While a lowering of the birth-rate may occur as a result of improvements in the standards of living, such improvements are not likely to materialise if there is a concurrent increase of population. It is, therefore, apparent that population control can be achieved only by the reduction of the birth-rate to the extent necessary to stabilize the population at a level consistent with the requirements of national economy. This can be secured only by the realisation of the need for family limitation on a wide scale by the people. The main appeal for family planning is based on considerations of the health and welfare of the family. Family limitation or spacing of the children is necessary and desirable in order to secure better health for the mother and better care and upbringing of children. Measures directed to this end should, therefore, form part of the public health programme.

106. All progress in this field depends first on creating a sufficiently strong motivation in favour of family planning in the minds of the people and, next, on providing the necessary advice and service based on acceptable, efficient, harmless and economic methods. But

these presuppose (1) intensive studies about the attitudes and motivations affecting family size and techniques and procedures for the education of the public on family planning, and (2) field experiments on different methods of family planning as well as medical and technical research.

197. A programme for family limitation and population control should:

(*a*) obtain an accurate picture of the factors contributing to the rapid population increase in India;

(*b*) discover suitable techniques of family planning and devise methods by which knowledge of these techniques can be widely disseminated ; and

(*c*) make advice, on family planning, an integral part of the service of Government hospitals and public health agencies.

A sum of Rs. 65 lakhs has been allocated by the Central Government in the Plan of the Ministry of Health for a family planning programme.

This programme includes:

(1) The provision, in Government hospitals and health centres, of advice on methods of family planning for married persons who require such advice : Medical officers working at hospitals and health centres like maternity and child welfare clinics should give advice to women regarding family planning when such advice is necessary for health reasons. If a doctor feels that a woman patient cannot undergo again the strain of pregnancy and parturition without danger to health, it is obviously the duty of the doctor to give such advice as is necessary to enable the person to prevent conception. In these circumstances the doctor would be justified in suggesting any chemical, mechanical or biological methods of contraception or sterilization as may be indicated for the individual case. The giving of advice on birth control has been a procedure allowed by the Ministry of Health in U.K. in medical centres maintained by the local authorities.

(2) Field experiments on different methods of family planning for the purpose of determining their suitability, acceptability and effectiveness in different sections of the population: If it can be demonstrated that our people, particularly those living in rural areas, can be educated to accept the rhythm method and use it as a practical method of limiting family growth, Governmental support should be extended to the propagation of this method. From the point of view of avoiding enormous expenditure as well as that of securing the ethical values that community life would gain by the self-imposed restraint which the rhythm method involves, it would seem desirable to try out this method fully and thus ascertain its practicability. Whether the rhythm method is capable of wide application in the community with adequate results or not, actual experimentation alone can tell. Research and experiments need not however be confined to a single method. There are numerous voluntary agencies which are currently propagating the spread of information on family planning and the use of chemical and mechanical contraceptives. Their activities would need support.

(3) Development of suitable procedures to educate the people on family planning methods : Inexpensive means of rapidly educating the public in matters relating to family size will have to be evolved if large-scale reduction in the national birth-rate is to be obtained. Scientific techniques are available to assess the effect of mass educational campaigns. These techniques should be used to develop educational programmes suitable for the different economic and social sections of the population.

(4) Collection, from representative sections of the population, of information on reproductive patterns, and on attitudes and motivations affecting the size of the family : The reproductive pattern in any population is largely determined by social and cultural factors which may differ from one area to another. A thorough investigation of the differences in attitudes and motivations towards family size and of the factors responsible for producing such differences is important. Research along these lines is necessary if we are to understand the particular sentiments and aspirations to which programmes of family limitation in various sections of the population should appeal.

(5) Study of the inter-relationships between economic, social and population changes. The information obtained by such studies will form the necessary background for the formulation of a national population policy and the development of appropriate measures for population planning based on factual information.

(6) Collecting and studying information about different methods of family planning (based on scientifically tested experience in India and abroad) and making such information available to professional workers.

(7) Research into the physiological and medical aspects of human fertility and its control.

108. It is considered that the problems of population and family planning may be divided into those relating to:

(1) policy and approach, and

(2) research and programmes.

Two committees have accordingly been constituted. It would also appear desirable to set up at a later date a population commission to assess the population problem, consider different views held on the subject of population control, appraise the results of experimental studies and recommend measures in the field of family planning to be adopted by the Government and the people.

CHAPTER XXXIII

EDUCATION

1. General

Education is of basic importance in the planned development of a nation. The educational machinery will have to be geared for the specific tasks which the nation sets itself through the Plan so as to make available in the various fields personnel of suitable quality at the required rate. The educational system has also an intimate bearing on the attainment of the general objectives of the Plan inasmuch as it largely determines the quality of the manpower and the social climate of the community. In a democratic set up, the role of education becomes crucial, since it can function effectively only if there is an intelligent participation of the masses in the affairs of the country. The success of planning in a democracy depends also on the growth of the spirit of co-operation and the sense of disciplined citizenship among the people and on the degree to which it becomes possible to evoke public enthusiasm and build up local leadership. It is essential for the successful implementation of the Plan that the educational programme helps to train the people to place responsibilities before rights and to keep the self-regarding outlook and the force of the acquisitive instinct within legitimate bounds. The educational system should also satisfy cultural needs, which is essential for the healthy growth of a nation. The system should stimulate the growth of the creative faculties, increase the capacity for enjoyment and develop a spirit of critical appreciation of arts, literature and other creative activities. The fulfilment of the objectives mentioned above, will lead to the development of an integrated personality in the individual, which should be the first and foremost aim of any system of education.

2. The lines of future reorganisation have become clear in many directions as a result of the deliberations of various committees and commissions set up in recent years and the pioneering work of private institutions. The Planning Commission is mainly concerned with viewing education as a part of the total national effort, establishing and strengthening its links with other aspects of national life and assigning priorities for the various educational programmes awaiting implementation.

Assessment of Present Position

3. An analysis of the existing situation reveals the following features that need special attention :—

(1) Considering the size of the population, the overall provision of educational facilities is very inadequate. They are provided for only 40·0* per cent of the children of the age-group

*Figures are provisional.

6-11 and 10·0* per cent of the persons of the age-group 11-17 and 0·9 per cent of those of the age-group 17-23. The directive of the Constitution, however, is that free and compulsory education should be provided for all children up to the age of 14 within ten years of the commencement of the Constitution. This will necessitate expansion of facilities at higher levels also as more and more students pass out of primary schools. The literacy percentage of our population is 17·2* which is only a very rough measure of the huge task lying ahead in the field of social education. Similarly facilities for technical education need to be considerably expanded to meet the needs of the country adequately.

(2) The overall structure of the educational system is defective in many ways, one of which is that it is top-heavy. Although the provision at the secondary stage is properly proportioned to that at the primary stage, that at the university stage is larger than the base structure can profitably support. This is revealed also by the distribution of educational expenditure among the various stages. In 1949-50, for example, the direct† expenditure on primary schools was only 34·2 per cent of the total educational expenditure, whereas a sound and properly proportioned system of education requires that the major share of this expenditure should be incurred on primary education. The emphasis on primary education needs to be very considerably increased during the period of the Plan, which would necessitate a corresponding increase in secondary education during the next stage of our development, though some expansion would be inevitably required even during the present period to cope with the increased demand for teachers for the large number of schools at the primary stage that would come into being. In view of the decision of the Government to adopt the basic pattern at this stage, the need of teachers for these schools will require expansion of facilities at the secondary stage on post-basic lines. Otherwise, however, both in the field of secondary and university education, the general problem is one of consolidation rather than expansion, except in certain fields like Agricultural and Technical High Schools at the secondary stage and Public Administration, Social Service Administration, Business and Industrial Administration, etc., at the university stage—where provision is non-existent or insufficient. Another reason is that the recent expansion in these fields has not always been on a sound basis with adequate provision of teachers, equipment, etc., which has unduly lowered standards.

There are grave disparities between different States in the matter of provision of educational facilities. The expenditure on education compared to total revenues and population also varies in different States. The internal distribution of expenditure should be so arranged and Central grants should be so dispensed that at least the serious inequalities between States tend to disappear.

Educational facilities are not properly distributed between urban and rural areas. Whereas 82·8 per cent of the population live in rural areas the percentage of the total number of pupils in recognised primary, middle and high schools that were studying in rural areas in 1949-50, was 60, 67 and 26 respectively. The respective percentages in 1937-38 were 82, 72 and 28. At the university level facilities are practically non-existent in the rural

* Figures are provisional.
† It is very difficult to estimate the indirect expenditure.

areas. Expenditure on recognised educational institutions in rural areas fell from 36 per cent of the total expenditure in 1937-38 to 30 per cent in 1949-50 although the total expenditure on education in rural areas had considerably increased.

There is lack of balance between provision of facilities for different sections of society. The problem of backward tribes and scheduled castes is dealt with under Social Welfare. Of special concern in this regard is the neglect of women's education. Whereas women constitute nearly half the population the girl pupils in the primary, middle and high school stages in 1949-50, were only 28, 18 and 13 per cent respectively of the total number of pupils studying in these stages. In universities and colleges* for the same year girls were only 10·4 per cent of the total number of students. At the primary stage most of the States have not found it feasible to have separate schools for girls and the only remedy lies in propaganda among parents to remove their prejudice against co-education in primary schools. Co-education at the middle and high school stages may not be feasible in the present state of our society, and emphasis would need to be laid on the development of middle and high schools for girls. Girl students should also be encouraged to take to higher studies by freestudentships and scholarships.

The various stages of the educational system are not clearly and rationally marked out. The duration and standards of the primary and secondary stages vary considerably in different States. The relationship of basic education with ordinary primary education and that of post-basic education with existing secondary education has not been clearly defined. Again, while most of the students finish their educational career at the close of the primary stage in the first instance and then at the end of the secondary stage, none of these stages is complete by itself. The proper definition and integration of the different stages and branches of the educational system are an urgent necessity.

(3) Another disturbing feature of the situation is the large wastage that occurs in various forms at different stages of education. At the primary stage quite a large number of pupils discontinue their studies even before obtaining a state of permanent literacy. Of the total number of students entering schools in 1945-46 only 40·0 per cent reached class IV in 1948-49. The expenditure on the remaining 60·0 per cent was largely wasted. The experiment of compulsion, which is generally regarded as the only remedy for improving the position, has not made much progress. In 1948-49 approximately only 115 lakhs pupils were under compulsion and most of the States expressed their inability to enforce it. The problem of 'stagnation', that is, where a pupil spends a number of years in the same class, is also serious. There is, moreover, incomplete utilisation of existing facilities, as is shown by the unsatisfactory results of a large number of students. This wastage is largely due to the poor quality of teaching as well as faulty methods of education. Another form of wastage is the unplanned growth of educational institutions.

The absence of adequate facilities for technical and vocational education results in a much larger number of students going in for general education than is justified by the requirements of the country or the tastes and aptitudes of the pupils. The undue emphasis on the academic and theoretical aspects of education retards the development of the practical sense,

* Includes students of Boards of Intermed ate Education.

initiative and resourcefulness among large numbers of students. One result of this is that educated people tend to depend too much on employment by Government or commercial concerns, which can absorb only a limited number. This also leads to undue strain on the resources of universities as students, on the completion of secondary education, tend to drift to universities in the absence of any other alternative. Education should, therefore, be given a more practical bias from the very beginning and at the post-secondary stage there should be greater adjustment between the needs of the country and the output of educational institutions.

(4) The position in regard to teachers is highly unsatisfactory. A very large percentage of them are untrained. In 1949-50 the percentage of untrained teachers was 41·4 per cent in primary schools and 46·4 per cent in secondary schools. For purposes of educational reorganisation most of the trained teachers will also require considerable retraining. Expansion of training facilities, therefore, deserves very high priority.

Another feature of the situation is the dearth of women teachers, who are especially suited, for *balwadis* (including pre-schools and day nurseries) and primary schools. To remove this shortage, facilities for part-time work in schools should be provided for married women, who cannot devote their whole time to the profession. Indigent women should also be trained as teachers.

The scales of pay and conditions of service of teachers are generally very unsatisfactory and constitute a major cause of the low standards of teaching.

(5) The high cost of education, especially at the university level, prevents many an intelligent student from proceeding to higher studies. The provision of free-studentships and scholarships needs to be considerably increased. It should be a principle of State policy that none who has the capacity to profit by higher education should be debarred from getting it. Since the limited economic resources of the State will place limitations on the implementation of this principle, facilities for part-time work by students to meet the expenses of their education should be developed to the utmost possible extent.

(6) The undue stress on examinations and memory work in the present system of education is not conducive to the development of originality or a spirit of research.

(7) Lack of facilities prevents institutions from building up the physical and mental health of students.

(8) There has been a general neglect of the study of our own culture with the result that the educated classes are often divided by a gulf from the mass of the people. The system of education should help in building up the cultural and political identity of the nation. Graded text books for the purpose of building up civic loyalties and creating understanding of democratic citizenship should be prepared.

(9) The meaning of planned development and the Five Year Plan needs also to be universally taught in our educational institutions and included in social education programmes.

4. Some attempts have been made to remodel the system in such a way as to suit our needs better. At the primary level the basic pattern has been accepted and a beginning has been made in the matter of opening new basic schools and converting some of the existing primary schools into basic ones. Some attempts have also been made to make secondary education more broad-based and practical. But by and large teaching continues on old lines and practically the entire task of remodelling the system still remains to be done.

5. Summing up, the needs of the present situation are :

(1) re-orientation of the educational system and integration of its different stages and branches ;

(2) expansion in various fields, especially in those of basic and social education, remodelled secondary education and technical and vocational education ;

(3) consolidation of existing secondary and university education and the devising of a system of higher education suited to the needs of the rural areas ;

(4) expansion of facilities for women's education, especially in the rural areas ;

(5) training of teachers, especially women teachers and teachers for basic schools, and improvement in their pay-scales and conditions of service ; and

(6) helping backward States by giving preferential treatment to them in the matter of grants.

Resources

6. In the context of our needs, our resources are very inadequate. The Committee on the Ways and Means of Financing Educational Development in India estimates that a national system of education—providing education for 100 per cent of the children of the age-group 6-14, secondary education for 20 per cent of those coming out of the first stage, university education for 10 per cent of those passing out of high schools, technical education on a modest scale and other minor items—when it comes into full operation, will require an annual expenditure of nearly Rs. 400 crores. In addition, for basic and high schools only approximately Rs. 200* crores will be necessary to train 27 lakhs of teachers that will be required and Rs. 272 crores for buildings. The total number of teachers in 1949-50 was about 7† lakhs, most of whom would require retraining to fit in the schemes of educational reorganisation. No authoritative assessment exists of our present resources in buildings but it is common knowledge that most of the buildings, at least of the primary schools, are very inadequate for the purpose for which they are used. In spite of considerable increase in the provision for education in recent years the total educational expenditure in 1949-50 was only about Rs. 100 ‡crores.

* For basic teachers and teachers of junior departments of high schools Rs. 325 per year per trainee and for teachers of senior departments of high schools Rs. 400 per year per trainee has been assumed. The training period has been taken as 3 years.

† In primary and secondary schools.

‡ Figures are provisional.

7. The Five Year Plan makes a provision of Rs. 151·66 crores (35·02 crores for the Centre and Rs. 116·64 crores for the States) for educational development or of Rs. 30·33 crores per annum. This average indicates an increase of 55 per cent over the development expenditure in 1950-51 which was Rs. 19·55 crores for the Centre as well as the States. The inadequacy of this provision is all too obvious. It is also obvious that the gap between needs and resources available, or likely to be available, cannot be covered from the State finances alone. And yet it has to be recognised that the provision of a certain minimum of education to all citizens within a reasonably short period of time is an essential pre-requisite, next only to food, for the successful implementation of development programmes and survival of democracy in India. It is extremely urgent, therefore, that all other possible sources of help should be discovered and fully utilised.

8. In the context of prevailing conditions a larger share of responsibility for social services will have to be borne by the people themselves. In the case of education there is evidence that the people are keen to contribute in cash, kind, labour or land for creating the necessary facilities. It should be a major aim of the Central and State Governments and non-official organisations to explore this avenue and harness this urge in the people by using their influence, judiciously providing technical aid and grants, and stimulating a spirit of emulation among local communities. The school should become a focus for the joint endeavour of the community and the hub of its social, cultural and economic life. This approach can take different forms from putting up a building, supplying furniture and equipment, making contribution in cash or kind at the time of the harvest or labour in the off-season, to taking up responsibility for running the school as their own. It is possible to visualise the village community as not merely supplying adequate land but also digging wells and supplying bullocks, seeds, manure, implements and labour for cultivating the land so that its produce is a net profit to the school which can be used for running it and the many social, cultural and other activities of the community that would grow round it. The village community has experience of this mutual-aid activity for their own farming needs. Its administration will, therefore, not require any specialised organisation. This will give opportunity to the constructive workers, the members of the Bharat Sevak Samaj and Panchayats and will introduce a series of activities so essential for creating and maintaining interest, confidence and initiative in the local community. It will give the administrator—with his influence, organisational capacity and experience—scope for constructive leadership amidst the routine of his work. Besides mobilising the help of the local community for the cause of education every attempt must be made to develop the productive aspect of basic and social education.

Priorities

9. The paucity of our immediate resources makes it imperative that our programmes be selected according to a careful system of priorities, so that the most urgent needs may be met and the most effective use made of the money spent. In view, however, of the varying needs and resources of different parts of the country and the differences in their general

and educational development, these priorities can be indicated only in broad outlines. The importance of the educational programme in the general plan of development lies in the fact that it is only through a properly organised educational approach that the personnel of the requisite calibre at various levels, required for the implementation of the Plan, can be trained and made available. This requires, firstly, the improvement and strengthening of existing institutions and secondly, the expansion of facilities on a considerable scale as and when resources become available.

10. The various stages of education are, however, so closely interlinked that it is not possible to lay down any strict order of priorities amongst them, so far, at any rate, as the improvement of the existing facilities is concerned. Better primary or basic education depends on better teachers, who can only be supplied if standards of secondary education are greatly improved, and this, in turn, depends on the provision of better teachers, who are educated in the universities and are prepared for their profession in the training colleges. That is why, it is necessary to ensure that there is a general advance and improvement on all fronts.

11. Subject to these remarks, however, it may be stated that side by side with the consolidation and improvement of existing facilities, high priority should be given to experiments and research in improved educational methods; to the training of teachers; to the preparation of literature for teachers, children and adults; to providing adequate facilities for basic and social education; and to developing, to the fullest possible extent, the facilities for technical and vocational education at lower levels, as well as for training high grade technicians in certain selected fields. In the field of university education, high priority should be given to the improvement of standards and the development of post-graduate work and research.

12. In the context of the remarks made above, the Commission is of the view that in the educational development envisaged, a serious attempt should be made to achieve the following broad targets in the various sectors, subject to such modifications as may be required to suit local conditions :—

(1) At the conclusion of the Five Year Plan, educational facilities should be provided for at least 60 per cent of all the children of the school-going age within the age group 6—11, and these should develop, as early as possible, so as to bring children up to the age of 14 into schools in order to cover the age-group 6—14, which should be regarded as an integral whole for the purpose of providing basic education. The percentage of girls of the school-going age (6—11) attending schools should go up from 23·3 per cent in 1950-51 to 40 per cent in 1955-56.

(2) At the secondary stage*, the target should be to bring 15 per cent of the children of the relevant age-group into educational institutions. The percentage of girls of this age-group attending schools should go up to 10 per cent.

* The 1950-51 provision for the age-group 11—17 was roughly 11 per cent.

(3) In the field of social education, we should envisage that at least 30 per cent of the people (and 10 per cent of women) within the age group of 14 to 40 receive the benefit of social education in the wider sense of the term.

No targets have been laid down for the university education as the problem here is mostly one of consolidation rather than expansion. It is, moreover, not possible to determine quantitatively the progress in higher education with the same ease as in the case of earlier stages.

We estimate that with State resources alone the country will be able to provide schooling facilities for 55·7 per cent of the children of the age-group 6-11 and 13·3 per cent of those of the age-group 11-17. The gap between these figures and our targets, stated earlier, will be bridged by the development and utilisation of local resources and the productive capacity of students by the introduction of crafts in schools.

AGENCIES

13. *Role of the Central Government*—Educational programmes are carried out by the Central Government, the State Governments, local bodies and private agencies. According to the Constitution, education is primarily the concern of the States. The Central Government have special responsibility in certain fields which have been clearly defined in List I of the Seventh Schedule and share responsibility with the State Governments in certain other fields also enumerated therein. It is, however, generally recognised that the Centre has also an overall responsibility for helping, co-ordinating and guiding the work of the States so that national policies can be evolved and satisfactorily worked out. In view of the shortage of funds, the Centre has so far not been able to do much in this direction. In spite of the substantial improvement, which the Plan makes in this respect, the total resources available with the Centre still remain inadequate and call for the utmost care in their disposal, in order to obtain the maximum results. Except for helping especially backward States, we feel, that in the field of pre-university education, it would be very difficult at present for the Centre to undertake responsibility for expansion. It should confine itself to helping, on a contributory basis, those States which are willing to co-operate in certain activities of national significance like research in techniques, training of especially selected personnel, production of literature, conducting pilot experiments, etc. Similarly in other fields, where the Constitution does not lay down a definite responsibility on the Centre, grants-in-aid should be related to specific schemes, and an adequate machinery set up to see that the grants are actually spent for the purpose for which they are meant. At the university level the setting up of a University Grants Commission has already been recommended. The work of guiding and co-ordinating technical education in the country is performed by the All-India Council for Technical Education. Similarly it is necessary to have an expert body at the Centre to guide and co-ordinate work in the States in regard to basic, social and secondary education, especially at this stage when much pioneering work remains to be done. This body should also frequently assess the work done in different States and publicize the results. In this way sound foundations would be

laid for the expansion programme when more funds become available. Another very important activity, not especially mentioned in the Constitution but which the Centre has to take up, is the promotion of the federal language.

14. *Role of local bodies*—The question of the relationship between the State Governments and local bodies arises mostly in the field of primary education. In this field a recent committee of the Central Advisory Board of Education has examined the problem and its recommendations are under consideration by the various State Governments. In order to secure maximum local help and co-operation and to build education closely round the life of the people, progressive decentralisation in the administration of education at lower levels should be effected as conditions become more and more favourable. Care should, however, be taken to ensure broad uniformity of educational policy and efficient and impartial administration.

15. *Role of private agencies*—Private agencies have always an important role to play in a democracy. In India where till recently they have had the major share of responsibility for welfare activities, they occupy a special place. Private agencies are generally able to manage things more cheaply than Government for they are able to appeal more effectively to the idealism of workers and are comparatively free from red tape. In view of these considerations and the fact that mobilisation of the efforts of the entire nation is necessary to meet the situation in regard to education, for which private agencies are especially fitted, it should be an item of priority in the Plan to help such agencies to develop their capacity fully and to function effectively. Both the Central and State Governments have schemes for helping private agencies.

2. Pre-School Education

16. The highly impressionable, plastic and educationally potent period of a child's life preceding the age of six, when compulsion begins, has been neglected in India although it is all the more important in this country in view of the extremely depressing conditions of home life in most cases. The existing schools are mostly concentrated in the towns and cater for the children of the richer classes while the need of the rural areas and of industrial labour, which is very much greater, is almost completely neglected.

17. In view of the shortage of funds Government can accept only limited responsibility in this field, confined to research in evolving methods suited to our needs, training of teachers, helping private agencies who take up this work in the rural areas by grants-in-aid and running a few model *balwadis* or nursery schools in each State. In labour areas, it should be the responsibility of industry to make provision for such schools. In other areas the major burden of organising and running *balwadis* should be borne by local bodies. Where resources do not allow the opening of fulltime institutions, day nurseries, working for a few hours in mornings and evenings, should be organised by voluntary workers. Where buildings are not available seasonal open-air nurseries may be organised.

3. Primary (Including Basic) Education

18. The provision of free and compulsory primary education, is the first necessary step towards establishing equality of opportunity for every citizen. At this stage, we deal with the entire future human resources of the country and, if it is properly handled, a way can be found for the full development and the most effective use of these resources.

19. *Basic education*—A most important development in the field of education in recent years has been the acceptance of basic education by the country as the pattern for the education of children of the age-group 6-14. Work in this direction, however, has only just begun. It has, moreover, varied to such an extent in the matter of approach and quality in different places that it is impossible to get an idea of the work done from statistics alone. This confusion should, however, disappear after the clear lead given by the Central Advisory Board of Education in March, 1952, when they enunciated: "A system of education cannot be considered as basic education in the real sense unless (*a*) it provides an integrated course, including both the junior and the senior stages, and (*b*) places adequate emphasis on craft work in both its educational and productive aspects". The broad framework of basic education has been worked out and given inspiring expression at some places. But it has to be recognised that many of its details remain to be worked out and we are far from having fully developed the potentialities of basic education.

20. The foremost task in the field of basic education is the improvement of technique and the development of methods, by which it can be passed on to the vast majority of teachers of rather low educational qualifications and average ability. To this end at least one group of model basic institutions should be opened in each of the Part 'A' and 'B' States and in Delhi among part 'C' States. Each group should consist of a number of pre-basic and basic schools, a post-basic school, a teachers' training school and a teachers' training college. These institutions should be located near each other. One of their important tasks will be to develop a spirit of self-help and co-operation in the school community as well as to work for an allround reconstruction of the community around. In addition, a few experimental basic schools should also be opened in urban areas to discover necessary modifications of the basic system, as it has been worked out in the rural areas, to make it suitable for urban areas as well.

21. Our experience of basic education hitherto is very limited. Even so, as the recent inquiry conducted in regard to its productive aspect by the Ministry of Education shows, wherever the scheme has been given a fair trial it has yielded encouraging results in spite of serious handicaps. The stage has arrived for a thorough investigation of the obstacles in the way of the full development of the productive capacity of basic education, as far as that can be done without sacrificing educational interests, and a determined effort to remove them. Any success in this direction would help in the spread of free and universal basic education for the people.

22. The States have hitherto tried to run mostly basic schools of five classes which are truncated units not only economically but also educationally. We would recommend that all States should run, wherever conditions permit, eight-year full-fledged basic schools instead of five-year schools. The experience of Bihar indicates that hardly any additional recurring exp enditure would be involved in adding the three senior classes.

23. Insufficient attendance seriously affects the productivity of most basic schools. The remedy does not lie merely in compulsion. The positive approach to the question is to improve the economic condition of the villager. The burden on him of supporting the child, should be lightened by providing in schools free lunch, wherever possible, and by organising voluntary work outside school hours to enable pupils to produce essential consumable or marketable articles. Holidays should be so timed that labour of children is available to their parents in the busy season. The practical aspect of basic education and its capacity to serve the community should be fully developed to convince the villagers of its utility and win for it their loyalty. The teachers should also be taught in training colleges to handle more than one class at a time. Perhaps the most important aspect of the question is the improvement of the quality of teachers.

24. Non-provision of adequate land, initial equipment and other capital expenditure are amongst other serious handicaps. Most of the schools have no land while others have an insufficient amount of it. Land, however, is necessary to develop agriculture-centred basic schools and to introduce kitchen gardening in other schools. The report of the Ministry of Education on the productive aspect of basic education, referred to earlier, estimates that the total amount required for basic schools, for all the children of the age-group 6-14, and training schools, for training the necessary number of teachers for them, will be 31,46,460 acres which is only 0·99 per cent of the total cultivated area in India. Difficulties of procuring land have to be faced at the local level. We would suggest the following measures to solve them :—

(*i*) Basic schools should be opened, or existing primary schools converted into basic schools, preferably in those places where the local inhabitants are prepared to donate at least five acres of land and the local community, or the State, provides initial equipment and other capital expenditure. The experience of Bihar, where basic education has been given a comparatively fair trial over some period, proves that gifts of land for basic schools can be easily secured. The social education programmes of the State Governments can prepare ground for such donations.

(*ii*) Wherever Government land is available or where Government come into possession of land, such as by the abolition of Zamindari estates, basic institutions should have a prior claim in the surplus land.

(*iii*) All Government demonstration farms should be used for training the staff of basic institutions.

(*iv*) Wherever consolidation of holdings is undertaken, the needs of the local school for land should be taken into consideration in determining the extent of land to be reserved for the common needs of the village.

(*v*) Government should simplify procedure for the transfer of land and provide the schools with necessary facilities and co-operation of the agricultural department for improving the land offered.

(*vi*) Where land is not obtainable under any condition it may be rented.

(*vii*) Collective labour under the supervision of teachers, as has been tried in the basic school at Vedchhi*, for example, may also provide a way out of the difficulty of procuring land.

Requisitioning of land should not be resorted to, except under very exceptional circumstances, as it creates strained relations between the school and those who are dispossessed in the surrounding area.

25. It has, however, to be recognised that very little experience has been gained about the problem of agriculture-centred basic schools. It is very necessary, therefore, to take up forthwith a few agriculture-centred schools as an object of special study by qualified people so that they can provide guidance for the rest.

26. The disposal of the products of basic schools is not properly attended to. It is too often forgotten that indifferent craft work is not only bad economics but also bad education. Arrangements should be made to carry out all the craft processes so that finished products are turned out from basic schools, either singly or a number of schools co-operating together. Quality and taste should be properly attended to and every attempt should be made to eliminate waste. Articles produced should be generally for consumption by the comm unity jo students and teachers and the local community. If production is properly planned, and the community spirit is developed, there should be no unsold surplus. When, however, this adjustment is not perfect, the services of the normal machinery for the disposal of cottage industry products should be available to these schools.

27. In view of the central place which the personality of the teacher occupies in the basic system, the selection and training of the large number of basic teachers required is one of the most baffling problems in spreading basic education. The methods of selection should be so devised as to give due weight to personal traits in the teacher like the love of children and rural areas, self-help, initiative, resourcefulness, etc., which constitute really the key to his success as a basic teacher.

28. In view of the heavy cost that will be involved in training the large number of teachers required, it is highly important to develop the productive capacity of training schools to the fullest extent possible, consistent with educational interests. That will also provide pupil-teachers valuable lessons in self-help and resourcefulness. In view of the results obtained by some of the basic schools there are good prospects of achieving a fair amount of success in this regard in basic training schools and colleges.

29. The training of a large number of teachers, required within a reasonably short period of time, is a colossal task, which will need the closest co-operation of the Central Government, the State Governments and non-official bodies. Besides the services of basic education experts, the programme will require the services of allied departments like agriculture, animal husbandry, co-operation, etc., whose fullest co-operation should, therefore, be ensured.

* District Surat (Bombay State).

30. The training programmes should be split up into two parts, both proceeding side by side : one concentrating on quality, which can grow only slowly, and the other on those basic skills and knowledge like organised community living, craft work, etc., which can be imparted *en masse* in regional camps. The teachers trained by the latter method should continue to be trained on the job by guiding literature, by peripatetic teachers being posted in their midst for short periods, by holding short refresher courses, etc. To get the best out of the teachers, favourable atmosphere should be provided by giving a short course in basic education to all the officers of the department, so that they can guide the teachers with sympathy and understanding.

31. Buildings should be of the simplest possible type and, as far as possible, built out of local material and the free labour of the people. Government should help with technical advice for which the public works departments should experiment with cheap designs which can be constructed with locally available material. The response of the public in the matter of school buildings in many places shows what can be done by public co-operation. The procedure of giving building grants should, however, be so simplified that grants, which are meant to stimulate public effort, are not so long delayed as to damp it.

32. The precise nature of the administrative machinery will be determined by each State according to the prevailing conditions. In view of the past experience as well as the nature of basic education, however, we would recommend certain general considerations which, we feel, should be kept in view. Basic education being a new experiment, it is essential in the initial stages to create a strong nucleus by having a separate unit for it within the education department. Secondly, basic education should have the co-operation of all departments whose work is vitally related to basic institutions. The extent of the responsibility of each department in this regard should be carefully worked out. Attempt should be made to locate the headquarters, temporary or permanent, of the officers of the various departments at basic institutions, wherever possible. Thirdly, basic education, being a programme of community action, non-officials should be associated at different levels and local committees should have the largest powers possible, consistent with efficiency and broad uniformity of policy.

33. *Primary education*—As regards the question of ordinary primary education, we feel that, in view of the poor return from it, the tendency to open new primary schools should not be encouraged and, as far as possible, resources should be concentrated on basic education and the improvement and remodelling of existing primary schools on basic lines, as far as that can be done with the personnel available. Even where new primary schools have to be opened for any special reasons, the curricular content should generally be the same as for basic schools and the earliest opportunity should thereafter be taken to convert these schools into full-fledged basic schools. As an immediate step, craft teachers should be trained on a large scale and craft introduced in as many schools as possible. The conversion programme, as well as the programme of opening new basic schools, should be so conducted that other primary schools in the vicinity are also brought near the basic pattern. This is necessary not only to eliminate unhealthy rivalry between basic and ordinary primary schools but also to promote the development of a uniform system of education. It should, moreover, be preceded by the

education of the public in regard to the value of basic education. The question of improving pay-scales and conditions of service of teachers will be dealt with in a subsequent section. The question of improving of buildings of ordinary primary schools has to be dealt with in the same way as indicated in para. 31.

34. Although State resources should be concentrated largely on basic education the people should be encouraged to provide themselves with whatever education they can with the co-operation of voluntary agencies. Students can make a substantial contribution if their efforts are properly mobilised. Properly directed children's clubs should also be formed to impart some of the essentials of education to children for whom regular school education cannot be provided.

4. Secondary Education

35. The Government of India has set up a Commission to examine the entire question of secondary education. We have, therefore, confined our remarks only to a few of the more important and wider considerations which should be kept in mind in formulating its pattern.

Objectives

36. In the first place, secondary education must be closely related to the psychological needs of the adolescents for whom it is being designed. Secondly, it should be vitally related to the existing socio-economic situation, to the directive principles of State policy laid down in the Constitution and the approved schemes for social and economic-reconstruction. In order to equip the youth adequately for the needs of the existing socio-economic situation, it is necessary to give secondary education a vocational bias. At present this education is mainly academic and does not provide sufficient scope for adolescents with varying aptitudes especially those with a marked practical bent of mind. Thirdly, secondary education should grow from the education that is being given at the primary stage, *i. e.*, it should be closely integrated with the basic education and its essential underlying principles. There should be no wide variation in the method of teaching and curriculum of the basic and the secondary school. The planning of the secondary education must also have in view the creation of leadership in the intermediate level, because for the majority of students, formal education comes to an end at this stage. To this end, suitable types of multilateral or unilateral schools offering parallel courses should be provided and the personnel for vocational guidance, should be trained. The standards to be attained should be high enough, on the one hand to make the majority of students whose education ends at the secondary stage to be efficient workers and, on the other, to enable the minority who proceed to higher education to profit from the instructions they receive at these institutions. In view of the role it has to play between the basic and the higher stage, the planning of secondary education requires considerable care and attention.

FINANCE

37. Regarding finance, capital expenditure should be provided partly by the State and partly by the local people. In the rural areas, the local people should help by providing land, free labour in the construction of buildings, etc. Simple living, based on self-help, should considerably reduce living expenditure in hostels. Economic activities like agriculture, cottage industries, small-scale industries, etc., should be encouraged—even from the wider educational point of view—and thereby help to recover at least a part of the recurring expenditure.

RELATIONSHIP OF POST-BASIC AND SECONDARY SCHOOLS

38. One problem which has to be immediately tackled is the relationship of post-basic and secondary schools. We feel that the same credit should be given to the products of the two types for equal years of schooling for purposes of inter-school transfers and going in for higher education. For purposes of employment and adjudging capacity for social service, however, the attainments of the different pupils should provide the data for assessing their comparative worth. Maintenance of detailed index cards should considerably help in this direction.

5. UNIVERSITY EDUCATION

39. The Ministry of Education appointed the University Education Commission, which reported in 1949, to examine the entire question of university education. The Commission has suggested comprehensive and far-reaching reforms. We have received valuable help from the Commission's report in framing our recommendations in the light of our resources and the over-all needs of the country.

40. The problem of the re-organisation of university education is really three-fold : the reform of the existing system to enable it to yield the best results it is capable of yielding, the building up of a new system (or systems) more suited to our national needs and the working out of the relationship of the various systems, while they exist side by side. In spite of their grave defects, the existing universities are the only repositories we have of the tradition of organised knowledge and the course of wisdom is to improve their working while we attempt to build a system or systems better suited to our needs.

REFORM OF THE EXISTING SYSTEM

41. *Finance*—The immediate difficulty that has to be faced in the reform of university education is that of finance. The financial position of most of the universities has worsened in recent years on account of the large increase in expenditure. A very large number of universities are running on deficit budgets and hardly any university has the funds for necessary development.

42. The sources of income other than grants-in-aid from Governments are drying up or like fees have already almost reached their limit. The financial burden of any improvement, therefore, that might be undertaken has to be borne mainly by the State.

43. While means should be found to strengthen the financial position of the universities to the extent that our resources allow, it is necessary to make the best use of available resources, for which we would recommend the following measures :—

(1) A University Grants Commission after the pattern suggested by the University Education Commission should be set up. It should be one of its functions to see that the tendency to open new universities, without adequate finances, is resisted. Universities should not recognise new colleges until they are sure of their financial stability.

(2) Economies should be effected and more satisfactory results obtained by the co-ordination of post-graduate work in the various universities, thereby preventing unnecessary duplication. This should also be the responsibility of the University Grants Commission when it is set up.

(3) There is some room for economy in the running of universities, as revealed by the Report of the Reviewing Committee, appointed by the Government of India to examine the problems and difficulties facing the three Central universities and the ways and means by which Government can help them. The recommendations of the Committee should receive the careful consideration of all universities.

(4) Residential life in hostels should be based on the maximum of self-help and the ideals of utmost simplicity should be inculcated among university students.

44. *Overcrowding in colleges*—Another very important problem is the serious overcrowding in most of the colleges, which makes individual attention, so necessary at this stage, simply impossible. We must develop and apply selective tests on a large scale so that nobody is allowed to go up for higher education who is not fit to profit by it. But, in order to be able to enforce this selection, opportunities should be provided to the large majority of students to find gainful employment by making pre-university education purposeful and complete in itself.

45. The above measures will, however, take time to produce any appreciable results. Immediate relief can be had by providing facilities for private study, through correspondence courses and radio lectures organised as far as possible by the various universities, and allowing students to take the various examinations privately. This will have the additional advantage of giving an opportunity for progress to those who have to enter life early.

46. The present practice under which a degree is the minimum qualification for a large number of even routine and clerical posts must change. Recruitment to the services should be by competitive tests, calculated to assess both aptitude and acquired knowledge, and in most cases, the non-possession of a degree should be no bar to taking the competitive examination. This will open out new avenues of progress for those who enter life early but who equip themselves subsequently through other methods. In certain services it may be advisable not to pitch the standards of academic qualifications high so that youngmen with the requisite aptitudes can be selected at an early age, say, at the end of the secondary stage, and whatever further training they require is given to them in institutions maintained by the departments themselves. Both these measures should make it unnecessary for many students to crowd colleges merely to get a degree for securing employment.

47. *Improving standards of teaching*—The most important factor responsible for the existing low standards of teaching is the poor scales of pay and unsatisfactory conditions of service of the staff employed. The question is discussed in paragraphs 120 and 121, In addition, the following measures are recommended for improving standards of teaching :—

(1) Proper steps must be devised to remedy the existing state of affairs in universities where, in too many cases, power and position depend not on the quality of work a person puts in but on his capacity to manage votes in the various university elections.

(2) The number of working days should be increased to at least 180, exclusive of examination days. The continuity of studies is too frequently broken by casual holidays. A continuous period of study, followed by a continuous period of holidays, is desirable. That would give students the opportunity to engage in part-time work if they so desired and enable college authorities to provide other activities for students such as study tours, work camps, etc.

(3) The system of inviting guest speakers on an honorarium may make the services of some good teachers available without much additional cost, especially in big towns and cities.

(4) In order to develop a more balanced outlook and presonality and habits of co-operation and self-help, students should engage themselves in such activities as community cleaning, making and repair of roads within the college compound, gardening, visits to the country-side and slum areas, etc. These activities will have the additional advantage of reducing the cost of maintaining a college.

(5) Another reform which is very urgently needed and should be considered in all its bearings is the raising of the age-limit of admission to universities.

(6) An atmosphere of discussion and free thinking should be encouraged through seminars, teachers' and students' camps, etc.

(7) Steps should also be taken to correct the one-sidedness of present university education so that arts students have basic scientific knowledge and science students the essential knowledge of the humanities.

48. *Control of universities*—The control of universities leaves much to be desired. Apart from the evils of the teacher-politician, who has come up as a result of the introduction of democratic control in universities, they are subjected to unhealthy outside influences which nullifies their autonomy. Except the three institutions directly administered by the Central Government, universities are a State subject, and consequently the all-India aspects are apt to be neglected. There is great disparity in the quality of administration in different universities. The functions of the University Grants Commission should, therefore, also include the ensuring of minimum standards of teaching and internal administration in the various universities and the securing of proper attention for the national aspects of university education.

Building up of a New System—Rural Universities

49. The urgent necessity of providing higher education to the rural areas is obvious. To meet this need, the University Education Commission has recommended a new pattern under the name of rural university. The Central Government should help to establish, during the period of the Plan, at least one such university, wherever the earlier stages of basic education, out of which it has to grow, have been worked out. Apart from serving the villages, the experience gained in the working of rural universities is likely to be useful in affecting certain necessary reforms in our existing universities, thereby enabling them to serve the national needs more effectively.

Relationship between Existing and Rural Universities

50. The rural universities that may be set up will have to pass through a period of experimentation, during which it is essential that they should have free scope for development. In order not to place the products of these institutions at a disadvantage, the degree of the rural universities should have as much validity in the matter of public appointments as those of older universities.

6. Social Education

51. The concept of adult education, which was mostly confined to literacy, was found to be too narrow to be able to meet the various needs of the adults. It was, therefore, widened to include, in addition to literacy, the health, recreation and home life of the adults, their economic life and citizenship training ; and to denote this new concept the term 'social education' was coined. Social education implies an all-comprehensive programme of community uplift through community action. External aid may be there but only to stimulate,

and not to replace, community effort. The importance of such a programme is obvious. It should not only make our limited resources much more effective, but also build up a self-reliant nation. In a country, where nearly 80 per cent of the population are illiterate, democracy will not take root until a progressive programme of primary education trains up a generation fit to undertake its responsibilities. Even the programme of primary education is considerably handicapped without a corresponding programme of the education of adults.

Assessment of the Present Situation

52. The work in the field of social education has been mostly confined to literacy. As a result of the work in recent years, especially during 1937-39 and since 1949-50, the literacy percentage increased from 8·3 in 1931 to 17·2* per cent in 1951. Most of the post-literacy work is done through libraries though, due to the dearth of suitable literature, the library movement has not made much headway in the villages. Recently the importance of recreational and cultural activities in programmes of social education has been increasingly recognised. Our cultural agencies like dance, drama, puppet show, fairs and festivals, *bhajan, kirtan*, etc., have been used but without any systematic attempt being made to gauge, develop and fully exploit their potentialities for mass education. Fairs and festivals had a meaning in olden times. They have, however, to be reinterpreted and modified to fit into the modern context and become live and full of meaning to the people today. Modern means of mass communication like the film and the radio have attracted much greater attention but, on account of their heavy cost, their use has been very much limited. Attempts have also been made in a few institutions to improve the economic condition of the villagers by teaching them improved crafts and agriculture. Very good all-round social education work has been done by some of the basic institutions. Co-operatives have also been developed as an agency of social education.

The Approach

53. The approach to the problem has to be determined in the light of our resources and the magnitude of the task ahead. The total expenditure on social education in 1950-51 was Rs. 83·45 lakhs. The average annual expenditure visualized in the Plan is Rs. 3·02 crores. We would, however, require an average annual expenditure of Rs. 27† crores for the next ten years to make everybody literate and give him in addition, a veneer of social education in the larger sense of the term. The situation, therefore, calls for a most carefully planned approach. At the national level, priorities in the programme of social education should be determined by the overall national priorities, thereby not only winning for it the enthusiasm and support of the country at large but also making it directly productive, as it would enable the human factor to respond fully to the national plans of development.

*Figures are provisional.

†Pamphlet No. 79—Bureau of Education, P. 113—Scheme (b).

Organization of co-operatives, agencies of village development, co-operative farming, agricultural extension work, etc., are priority tasks in the Plan. We would, therefore, recommend that social education should be based on them. That is to say, in handling these activities utmost attention should be paid to inculcating in the adults right individual and collective habits, and the knowledge of various subjects should be correlated to every step involved in these activities, thereby broadening the horizon of the adults and enabling them to understand and effectively participate in the wider national life. For that it would be necessary to give re-orientation courses to the personnel engaged in these departments and to prepare literature to guide them in this work.

54. Within the broad framework of national priorities the actual programmes in a locality should be determined by local needs. Planning at the local level is equally essential if the danger of frittering away our meagre resources in a number of unco-ordinated activities is to be avoided. The principles which should govern our approach in this regard may be stated as follows. Our resources should be used in the first instance, as far as possible, for that programme which not only meets some immediately felt need of the local community, in whose midst the programme is conducted, but also builds up resources for developing the programme with the expanding awareness of the community of its own needs. That is the only way by which, with our limited resources, we can make any impression on the problem. Secondly, the social education approach must permeate all programmes of State aid to the people. That is to say that before any programme of State aid is launched the people should be so educated in regard to it that their instinct to help themselves is fully aroused and they are anxious to receive the programme and do their utmost in the execution of it. Thirdly, there should be the closest integration of the various activities conducted in a locality so that the forces of friendship and goodwill released by one activity, immediately recognised by the villagers as good or pleasant, can be utilised for winning their co-operation for activities requiring more strenuous effort or the usefulness of which is not so immediately apparent to them. Fourthly, it should be our endeavour to increase the effectiveness of private agencies doing social education work in an area by giving them proper help.

The Programme

55. Besides the social education work which various agencies entrusted primarily with other work—like agriculture, animal husbandry, etc.—may carry on in close connection with their work, the programme of social education will fall into two parts. One should consist of whatever items any agency wants to or is capable of taking up out of the vast field of social education. Such agencies should be encouraged and helped, depending upon the usefulness of the work performed and the extent to which State resources can be diverted for the purpose. The other part should consist of a planned programme outlined below which should be undertaken wherever a properly trained worker is available. This is calculated to achieve maximum results. State resources should naturally be concentrated more on the latter part of the programme and in training workers for it. This programme will differ in rural and urban areas, in view of the different conditions prevailing in each.

56. In rural areas the point at which the social education programme in a locality can begin will of course depend on the conditions prevailing in the given area. Attempt should, however, be made at the earliest opportunity to organise an economic activity on co-operative basis. The precise nature of the activity and the degree and nature of co-operation will of course vary according to local needs and the degree of maturity of the local people. The underlying object is that not only will it provide education to the participants by organising community efforts and pooling their resources but it will a o by the more effective use of local resources, ensure economic gain, which will generate sustained interest and create confidence. The co-operative activity will be the rallying point for the community and mark the beginning of the community centre, the nucleus of which will be provided by the trained community organiser. Where a co-operative society already exists, the task of the worker will be to further improve it and transform it into an agency of social education. Similarly, programmes of health education and health services should also be organised on co-operative lines. The test of the proper time for any programme is that the community is psychologically prepared so that it can orgainse it with its own resources.

57. The importance of providing healthy recreation cannot be too strongly stressed. In organising recreational programmes special attention should be given to the revival and proper utilisation of our cultural agencies. Occasions provided by fairs and festivals should be utilised for purposes of education, recreation and community organisation. Literature should be prepared explaining the significance of the various fairs and festivals and their relevance today as well as how their full educational potentialities can be developed and made use of. The State should encourage writers to produce plays containing constructive ideas for such occasions. Film shows by mobile vans may also be provided to the extent that resources permit. It should be remembered, however, that unless integrated with the programme of development going on in an area their use is strictly limited. Certain films which will be relevant to conditions all over India, such as those dealing with common diseases and those calculated to inculcate right individual and collective habits, should be prepared by the Central Government and lent out to the various States. Well-regulated radio broadcasts should also be increasingly used for recreation and instruction.

58. In organising literacy and post-literacy work the aim should be to put it on a self-financing basis, as far as possible, by normally starting it only when the ground has been prepared by some more obviously useful activity like the economic activity, mentioned earlier, and the interest in knowledge has been sufficiently stimulated. A news-sheet, locally produced, and carrying suggestions for improving their lot—suggestions which they can immediately put into practice and in which they have developed faith as a result of the work in the first stage—should find ready customers among the villagers. At a later stage the State can help with libraries to the extent that its resources allow.

59. If we have provided the above four programmes, correlating relevant knowledge at every step, we will not only have met the primary needs of the masses but also taught them

through living, most of the things that are required for the citizen of a modern democratic State. There is, however, no end to activities that might be included in a programme of social education and, as the capacity of the masses to help themselves increases, more and more activities can be added. The above intensive programme should be spread in the surrounding villages through local leaders thrown up as a result of the working of small groups in youth clubs, women's clubs, children's clubs, farmers' clubs, etc., which it should be the aim of the community organiser to set up. Short and intensive camps should be organised for these leaders where the working of the social education programme is explained to them. Thereafter continual guidance is given to them from his headquarters by the community organiser.

60. In the case of urban areas, there are so many groups that the problems will have to be studied in relation to each group. The problem of healthy and cheap recreation is also more acute in the towns than in the villages. The overall considerations will, however, be the same as in the rural areas. The programmes must begin with felt needs and must have the capacity to grow by the resources of the local community. But in view of the congestion in towns, the high price of land and buildings and the business of the townsman the State or philanthropic organisations may have to provide a building for each community centre, though even here the attempt should be to mobilise as much of the local effort as possible for the purpose. As in the villages so in the towns, the State or other organisations that may be doing the work of social education should provide a worker, highly trained in community organisation and in the mobilisation of its resources. In urban areas, especially in industrial areas, special attention should be paid to improving the skill of the workers.

Selection and Training of Workers

61. The selection and training of workers are perhaps the most important tasks. Two types of social education workers will be required : those who have specialised in community organisation, and others who, with proper reorientation of outlook, can work under their guidance. In the case of the former especially, as the qualities of personality—initiative, resourcefulness, leadership, spirit of sacrifice and service and mastery of cheap, simple and intelligent living—are more important than mere academic qualifications, a new system of selection will have to be evolved. The training of community organisers should be very thorough and should consist of improved methods of Agriculture, Animal Husbandry, one or two of the most important cottage industries of the area concerned, principles and organisation of co-operatives, organisation of simple recreational programmes, organisation of community centres, etc., and above all the handling of these activities in such a way as to lead to the development of the minds of men most effectively. Training in literacy work should also be given. The training of community organisers should be arranged in conjunction with a training centre for basic teachers, a post-basic school or an agricultural school or college, which should preferably be at an extension headquarters. The greatest stress should be laid on the development of the maximum possible self-help and self-support, consistent with other interests, as these workers have primarily to infuse that spirit among the people.

62. The other category of social education workers will include school teachers, village level workers, various Government officers working in the locality concerned and workers of private agencies. Regarding pupil-teachers, training in social education work should be compulsory in all training colleges. The State should provide special grants for the departments of social education in training colleges for some years to come to give an impetus to the work. Short and intensive training in social education work should be organised in camps for teachers already on the job. The training of village level workers should also include initiation into the human side of their work : mass psychology, mass approach, community organisation, etc. Training facilities should also be offered for workers of private agencies. Higher officers should be given a reorientation course, so that they develop an integrated outlook, which will not only enable them to guide the worker with sympathy and understanding but also make for better inter-departmental co-operation, upon which the success of the rural development programme in an area depends.

Research in Literacy Methods and Production of Literature

63. Teachers' training colleges should take up research in methods of imparting literacy. Work in the experimental centres of social education, which should be associated in the case of rural areas with the group of model basic institutions mentioned earlier, should provide sufficient material for literature suitable for adults. There is also considerable room here for inter-departmental co-operation and for co-operation between the States sharing a common linguistic area. The Centre should provide model guide books for workers and prepare pamphlets on certain standard subjects like health, democratic citizenship, co-operatives, etc.

Devising a Suitable Machinery

64. The present stage of social education in the country is essentially experimental and needs Central guidance. The work should be co-ordinated with similar work in basic education and a common committee of experts should advise the Centre in the matter of initiating and aiding financially experimental work in both these fields in the States, and guide it, assess the results and make them available to other States. A common national platform, where the various agencies can meet at intervals for mutual discussion—so necessary for evolving a common outlook and securing co-ordination of different agencies—is already provided by the Indian Adult Education Association.

65. The director of social education in a State should be a man highly trained in community organisation and should be able to advise and help the State in the matter of public participation in its various development programmes. He should have a body representing important non-official agencies to advise him.

66. At the field level it is mostly a task of re-organising and co-ordinating existing agencies rather than of creating new ones. The problem is different in rural and urban areas. In rural areas the following measures should be taken :—

(1) Educational institutions should become examples of self-help, democratic community living, co-operative labour and intelligent handling of economic activity. Education should centre round agriculture and cottage industries

and educational institutions should be well equipped with agricultural farms, craft work-shops, etc. Educational institutions would thereby become excellent centres for spreading ideas for improving our social and economic life. Basic schools, which are already conceived on the above lines, have special significance in this regard. All facilities should, therefore, be provided at the basic training centres so that the teachers are trained as first class social education workers.

(2) The village level worker, wherever provided, should also be stationed in a school, as far as possible. Under his guidance even an ordinary school may begin to make some contribution, which will also prepare it for ultimate conversion into a basic school.

(3) Besides the above agencies the State should provide, wherever possible, community organisers, say one for 50 villages, to make use of, help, guide and co-ordinate the activities of all agencies working in their respective spheres. These also should be attached to educational institutions.

(4) The role of private agencies has already been discussed.

67. In urban areas quite a large number of agencies exist and the key problem is to co-ordinate their activities for a comprehensive programme of social education. For this purpose city or town social education councils should be instituted, where they do not exist already, each consisting of the representatives of the various agencies operating in the town concerned. This Council should distribute items of social education work among the various agencies according to their capacity and willingness to undertake it. Social education in industrial areas in towns has special importance in view of the dull and drab conditions of life prevailing in urban areas. Here the employer and the labour unions should be able to co-operate.

7. Professional Education

68. The importance of professional education cannot be over-emphasised as it trains the personnel for the varied national tasks ahead as well as fits pupils for earning a living for themselves. In view of the under-developed state of the country, professions offering prospects of lucrative employment are limited. Even so, and despite the increasing attention which professional education has received in the last few years, the available facilities on the whole fall far short of the demand by students. Some of the important lines of professional education are dealt with below.

Engineering and Technological Education

69. *Assessment of the existing situation*—Engineering and technological education has been receiving an increasing amount of attention during the last five years. The development, however, has not been uniform at all levels. Facilities for post-graduate studies and research are very inadequate, while the progress in respect of the undergraduate

courses has been quite rapid. There has also been considerable expansion in the provision of facilities for diploma or certificate courses for training supervisory personnel. The following figures indicate the quantum of development since 1947 in the provision of degree and diploma courses :—

Year	Engineering		Technology	
	Output	Intake	Output	Intake
Degree Courses				
1947	950	2,520	320	420
1950	1,652	3,297	795	1,156
1951	2,152	3,755	675	1,338
Diploma Courses				
1947	1,150	3,150	290	500
1950	1,864	4,400	689	1,212
1951	1,923	4,965	885	1,523

Almost all the above development has taken place in the basic courses and specialised courses have not received due attention.

70. At the craftsman level, except in a few progressive States, adequate emphasis has not been placed on this highly important type of training and the existing facilities are very insufficient. Similarly the development that has taken place in the provision of facilities for the training of industrial workers, of technical teachers and instructors and of retrenched personnel for alternative employment is also not commensurate with the requirements of the country. Technical high schools, recommended by the Central Advisory Board of Education, have also not received sufficient attention.

71. It would thus appear that there has been extensive development in the provision of courses leading to degrees and diplomas. Until, therefore, the Technical Manpower Committee of the All-India Council for Technical Education has assessed the country's requirements, it would be advisable to consolidate the work in the existing institutions and not to embark upon new ventures, except in certain specialised fields mentioned later. This is all the more necessary in view of the fact that the recent large increase in numbers has not always been accompanied by corresponding expansion of physical facilities (buildings and equipment) and the training in at least some of the institutions leaves much to be desired. The improvement of institutions and re-orientation of training are, therefore, the needs of the hour rather than any expansion in numbers.

72. Besides the quantitative aspect, mentioned above, are the more fundamental questions such as the pattern of technical education, the apportionment of responsibility as between the various agencies concerned, the control of technical education, co-operation between industy and commerce on the one hand and technical institutions on the other, etc., that will have to be dealt with.

73. *Pattern of technical education*—The Joint Committee of the All-India Council for Technical Education and the Inter-University Board has made specific recommendations in regard to the pattern of education at different levels, both in engineering and technology, *viz.* :—

(*a*) that a Master's degree be given after a person has obtained the first award in the subject (the first University degree or its equivalent) and has gone through disciplined training, which may involve a certain amount of research ;

(*b*) that the first degree in Engineering should be awarded on satisfactory completion of a four years' course, following Intermediate Science, of which at least six months should have been spent in practical training ; and

(*c*) that the first degree in Technology should be awarded either after a four years' course following Intermediate Science or a two years' course following Bachelor's degree in Science.

74. Except for a few courses at the Indian Institute of Science, Bangalore, and the Indian Institute of Technology, Kharagpur, there are hardly any facilities at the post-graduate level in engineering. On the technological side, there are wide disparities both in the nomenclature of awards and in the content of training leading to post-graduate awards. Similarly at the under-graduate level, there are considerable variations in the duration and content of training. The lead given by the Joint Committee should be of great value in removing this chaos and we hope that the various universities will adopt the suggestions made by this expert body. We also hope that similar committees should be constituted to review from time to time the existing pattern in order to keep it adjusted to the changing requirements of the country and the institutions concerned will take advantage of the advice tendered by the appropriate expert bodies in the interest of efficiency and maintenance of standards.

75. One very important lacuna in the organisation of facilities for degree and diploma courses is the absence of adequate arrangements to enable young people entering industry to continue their education, concurrently with the discipline and experience of work, by part-time study during day time or in the evenings. Almost all development has taken place on routine lines and the time has come when due emphasis should be laid on practical aspects. We consider it important that appropriate steps should be taken to bring about the establishment of what are known in the United Kingdom as technical colleges, preferably by re orienting the activities of some of the existing institutions. Such colleges will adopt a less academic approach to scientific principles than that characteristic of colleges preparing students for university degrees, and will train persons who will be of great use in the industrial advancement of the country.

76. For the training of engineering supervisory personnel, we would commend the universal adoption of the National Certificate Courses in engineering framed by the All-India Council for Technical Education which have the special advantage of being so devised that they can be taken on a part-time basis as well.

77. At the craftsman level there is at present no co-ordination in the matter of training and testing of craftsmen. The Government of India have recently appointed the National Trades Certification Investigation Committee. We hope that when its report is published it will provide valuable guidance in this matter.

78. Most of the trade training institutions cater at present for the urban population. We consider that the establishment of rural training centres, each at the centre of a group of villages, will go a long way towards improving techniques and skills of the villagers. These workshops should be opened in conjunction with basic institutions wherever possible, thereby effecting economy in equipment and staff and further establish the basic institutions in the affections of the people.

79. There is an urgent need for establishing a large number of technical high schools. We note that the All-India Council for Technical Education has appointed a small committee to report on this question.

80. *Apportionment of responsibility*— The responsibility for technical education has to be borne by the Central and State Governments on the one hand and industry and commerce on the other, with whatever assistance they can get from the public. So far as the State and Central Governments are concerned the Constitution has defined their spheres. Within that broad directive, we feel that the responsibility for technical education should be apportioned as follows :—

Research, advanced work and post-graduate courses.	Major responsibility should be that of the Central Government in view of the high expenditure involved and the need for proper co-ordination. The Central Government should, however, undertake this responsibility with such assistance as is available, from the State Governments, commerce and industry.
Under-graduate work	Major responsibility should be that of the State Government concerned with such grants-in aid as may be made by the Central Government for maintenance of proper standards and provision of new approved courses.
Diploma certificate courses for training supervisory personnel. . . .	The State Governments and the Central Government in the proportion agreed upon in each case
Courses in junior technical institutions, industrial schools, trade schools, etc.	The State Governments with the assistance of industry.
Secondary education with technical bias .	The State Governments.
Training of industrial workers or apprentices under proper supervision.	The Central and State Governments with the assistance of industry.
Training of technical teachers and instructors	The responsibility of the Central Government in this behalf will be in accordance with the responsibilities undertaken for the various levels of training for which teachers are being trained.

81. *Co-ordination of technical education*—At present, position is that the All-India Council for Technical Education advises Governments on the development of higher technical education. This body's activities, however, relate only to the promotion of training and research facilities in the various institutions. For the promotion of engineering research, the Council of Scientific and Industrial Research has recently set up an Engineering Research Board. It is clear that the activities of this Board will extend to engineering colleges as well and we have no doubt that suitable means will be devised to co-ordinate the work of the two bodies.

82. The Council for Technical Education proposes to have four Regional Committees, one each for the eastern, western, northern and southern regions of the country. The eastern and western Committees have already been set up and we hope that the other two will also come into being very soon. It is the function of these committees to advise the Central Government, the State Governments and other authorities on the various problems concerning the region connected with the provision of educational and training facilities in technical institutions and industry and commerce at all levels.

83. In the interest of balanced development of technical education, especially in view of its expensiveness, it is desirable that the advice of a body which can take a comprehensive and overall view should be at the disposal of the various authorities running technical institutions or those who open new ones. We would recommend that a healthy convention should be established that whenever a new project is intended to be launched, or substantial development in existing institutions is contemplated, the views of the All-India Council for Technical Education are sought and accepted by the authorities concerned. This body with its Regional Committees, which would be in close touch with both technical institutions and industry and commerce, should be in an excellent position to render that service.

84. *Co-operation between industry and commerce and technical institutions*—The inevitable necessity of the closest co-operation between industry and commerce on the one hand and the institutions that train the personnel for them on the other is obvious, and every step should be taken to improve the position in this regard. Technical institutions and industry working together can develop courses at the post-graduate level in several ways. One of these is "company operated courses" for giving the new employees, in addition to works experience, some form of orientation training to acquaint them with their surroundings, the organisation of the companies, their purposes and policies and, above all, to show them the paths of opportunities that are available to them. The other is "college extension courses" for the technical employees of industy. Colleges located in industrial centres can meet a real need by offering out-of-hours courses for ambitious technical graduates. The third is "post-graduate college courses" for employees on leave. Indian industry can certainly accomplish the task of training top-grade scientists by returning to the universities and colleges a few men each year for independent study. Such men, returning to colleges in their mature years, should not undertake any specific courses of study, or work for any degrees, but should rather pursue their own research objectives, developed from their industrial experience,

doing some teaching also if they feel so inclined. Industry could greatly expand opportunities for advanced study in the colleges by providing fellowships for its own employees, who could be given leave of absence to carry on such study.

85. The importance of keeping the teaching staff alert brings up another field for co-operative programmes. Best results can be obtained by industry convening conferences of professors and teachers. A similar result can be accomplished in part through lectures at the colleges by industrial leaders. A series of lectures by a number of men in different fields will probably be more effective than single isolated ones. The stimulation obtained from dynamic leaders in particular fields should be a significant experience.

86. It does not appear that industry is making full use of technical institutions for the solution of its multifarious problems, both analytical and experimental. While such problems should be studied in colleges and technical institutions, it is essential that close association is maintained between industry and such institutions, with frequent interchange between industrial engineers and faculty members, in order to achieve the most effective results.

87. To bring about the various forms of co-operation it is necessaty to bring together persons concerned with the provision of educational facilities on the one hand and industrialists and commercial magnates on the other. We consider it essential that the governing bodies of the various technical institutions should have adequate representation of industry on them and that the technical men working in industry should be given due representation on the standing advisory committees, constituted by the various institutions for the development of their departments. The presence of various interests in each region on the regional committees of the All-India Council for Technical Education should assist in bringing about greater co-operation between industry and educational institutions.

88. *Lines of development*—Organisation of facilities for professional education cannot be strictly related to the existing opportunities for employment but should take into account the developments planned in the various other spheres of national activity which require technical personnel. It is also necessary to turn out youngmen with initiative and grit in excess of the numbers indicated by the normal employment position in order that new ideas may be developed and small-scale ventures might receive an impetus. Data in regard to the employment position in different professions would still be an important requisite for the planning of facilities for professional education and it should be a point of major policy in the Plan to establish machinery for gauging the employment position accurately. Technical institutions can also help a great deal in the planning and organisation of facilities by maintaining proper records of their alumni and the work they do after leaving the institutions. Such records are useful in assessing the utility of the various courses provided in the institutions as well as for indicating the numbers for whom facilities are required to be organised.

89. Special attention should be given to the development of facilities for research and post-graduate work. To attract the right type of students it will be necessary to institute research scholarships of adequate value and in adequate numbers. Collaboration between universities and higher institutions on the one hand and the national laboratories and Central research institutions on the other would go a long way in promoting research. Integrated schemes to make full use of these institutions should be worked out. Existing institutions, having on their staff teachers of proved research ability, should also be encouraged by various means to develop their research sections in the particular fields.

90. The Central Government have established a higher technological institute at Kharagpur (the Indian Institute of Technology) and the All-India Council for Technical Education has recommended that this Institute should concentrate on post-graduate courses, advanced work and research. As many of the courses at the post-graduate level as possible should, therefore, be provided at this Institute. The Indian Institute of Science, Bangalore, should also be a good place, in our view, for the provision of such courses. Similarly other established institutions, which have attained high standards at the under-graduate level, should be assisted to develop post-graduate courses.

91. At the under-graduate level immediate steps have to be taken to provide courses in special subjects, such as technical training in printing, processing of woollen and silk fabrics, etc. Expansion of facilities in architecture and town planning is also immediately necessary and the State of Bombay, which is comparatively advanced in the provision of facilities in these subjects should offer training facilities to other States. Reorientation of courses in some of the existing institutions and improvement generally of the institutions should also be undertaken. In the plans submitted by the State Governments it is observed that most of the schemes relate to Government institutions. While industry and private philanthropists may be expected to help in the improvement of non-governmental institutions, the State Governments should not exclude such institutions completely from their plans. We suggest that the State Governments should, in consultation with the All-India Council for Technical Education, review the question of the continuance of the ill-equipped institutions started recently and, should the decision be to continue them, provision should be made both in the Central and the State Governments' plans to bring about the desired improvement. To enable the State Governments to bear this increased burden the Central Government may undertake partial responsibility also for institutions hitherto financed wholly by the State Governments.

92. For the training of supervisory personnel special emphasis should be laid on the reorientation of the activities of some of the existing institutions so as to train students for the National Certificate Courses of the All-India Council for Technical Education, mostly on part-time basis.

93. The greatest need for expansion of training facilities is at the level of artisans and craftsmen. Institutions run by the Ministry of Labour, trade schools, industrial schools, production-cum-training centres should be opened on an extensive scale, so that the skills of the

large numbers of people, engaged in production or likely to be so engaged, are developed. The need for establishing rural training centres in villages has already been stressed. In towns, industry and technical institutions should co-operate to provide instruction for industrial employees. Training of varying standards will have to be organised for such persons.

94. Another important activity which should be organised on an extensive scale is the provision of apprenticeship training schemes in industry. Proper arrangements should be made for supervision of the training programmes in industry and for their co-ordination with instruction in technical institutions. The success of part-time courses depends mainly on the organisation of apprenticeship training schemes and properly co-ordinated programmes of this kind are likely to lead to increased production. We hope that the regional committees of the All-India Council for Technical Education will consider this task as of the greatest urgency and importance.

95. Only a few institutions have arrangements for refresher courses. Promotion of these courses, especially in areas where there is concentration of industries and other technical activities, should be encouraged. The regional committees of the All-India Council for Technical Education should investigate this problem in each region and organise, in collaboration with industrial and technical establishments on the one hand and educational institutions on the other, short-term refresher courses in various subjects, on a full-time or part-time basis, as may be convenient. As such courses will primarily benefit industry and other technical establishments, the financial liability should normally be borne by them though, with a view to giving encouragement, Government may share the responsibility to some extent in the initial stages.

96. The only institute for training of technical teachers is the one established by the Ministry of Labour at Koni Bilaspur. Here, instructors are trained for craftmanship training. Knowledge of teaching methods is as important for a teacher in a technical institution as elsewhere. Some provision for the training of teachers has been made in the Ministry's plan as a beginning in this direction.

Education for Commerce and Management

97. The needs of commerce are many. But though facilities exist, no comprehensive survey has been made of the state of commercial education in the country and the standards of the various courses provided. The need for such a survey can be easily appreciated.

98. There is considerable room for co-ordination and standardization in commercial education outside the universities. Different courses and examinations are held by various bodies which include the State Governments and commercial institutions and result in wide variation in standards which not only impede development of commercial education but lead to confusion in the employing agencies about the utility of these courses. The All-India Council for Technical Education and its board of technical studies in commerce and business administration have prepared national diploma and certificate courses for the training of

different categories of personnel required for commercial occupations. These courses, designed on a national basis and having in view the requirements of commerce and industry, go a long way towards achieving the much needed co-ordination and standardisation of training. A number of institutions are already affiliated to the All-India Council for these courses, and it is necessary now to have them accepted all over the country. We would suggest that the State Governments, who have their own institutions for commercial education or give grants-in-aid to similar private institutions, should introduce the national diploma and certificate courses. The All-India Council should periodically assess the standards followed by them in training and education.

99. A very important aspect of education for commerce which has attracted great attention of late, and has led to considerable development in the United Kingdom and the United States of America, is education in business management and industrial administration. The need for increasing production and raising the standard of living of the people by improving efficiency of manufacturing and distributing processes requires specially trained management personnel at all levels and in all fields. It is not enough to have only scientists and technologists but also scientists and technologists who can administer and organise, large scale production and distribution. The majority of men who possess technical qualifications are entrusted with managerial functions at a comparatively late stage of their career. The need for training such men is obvious. The observations made by the University Education Commission, the Percy Committee of the United Kingdom and the Joint Anglo-American Council for Productivity, all bring out prominently the importance of management studies and the need for facilities for such studies. The remarks of the Percy Committee in particular are fully applicble to the conditions which obtain in India :—

" The highly trained technician is often ignorant of the principles of industrial organisation and management and he often shows no inclination to accept administrative responsibility. Admittedly, there is much that can be learnt in this field only from experience, but there is a body of knowledge, the awareness of which may greatly facilitate the process of learning. This body of knowledge should be made available both at the undergraduate and the post-graduate stages."

100. There is scope for organised education for management in this country and youngmen who reveal aptitude for managerial work can be better prepared by such education to take up responsible managerial positions in business. The task of detecting aptitude for managerial works and providing appropriate education and training to develop such aptitude into a profession can only be dealt with by such experts as now constitute the committee on industrial administration and business management appointed by the All-India Council for Technical Education. This committee has already prepared a plan for introducing specialised full-time courses on industrial administration and business management for the eastern region and is at present engaged in preparing a similar plan for the western region. It is important that the work of the committee is carried through with expedition and its plans and proposals for developing facilities for management studies on a regional basis are implemented.

101. Among the various professional courses law attracts, even now, perhaps the largest number of pupils in spite of the fact that conditions are by no means easy in that profession. This may be due to a desire to qualify for at least one profession however difficult the chances in it may be. Most of lecturers in law colleges are part-time and the attention they give to their work leaves much to be desired. The University Education Commission has analysed the question of legal education in detail.

8. WOMEN'S EDUCATION

102. Everyone realises the significance of the problem of women's education in the special circumstances of our country today and the need for adopting special measures for solving it. The general purpose and objective of women's education cannot, of course, be different from the purpose and objective of men's education. There are, however, vital differences in the way in which this purpose has to be realised.

103. The main point of difference to be stressed is that there are particular spheres of life in which women have a distinctive role and in which they can make a special contribution. It is now universally recognised that in the management of the household, in bringing up children, in the field of social service, in nursing and midwifery, in teaching, especially in elementary schools, in certain crafts and industries like knitting, embroidery, etc., and in the field of fine arts, women have, by instinct, a better aptitude. This does not, however, mean that women should, whatever be their individual aptitudes and ambitions, be confined to these few spheres. They must have the same opportunities as men for taking to all kinds of work and this presupposes that they get equal educational facilities so that their entry into the professions and public services is in no way prejudiced.

104. In a programme of women's education the needs of different age-groups have always to be kept in view. These groups are : girls of the school-going age, *i.e.*, of the age-group 5-11 ; girls of the age-group 11-16 ; girls above this age who are married and have to look after their families ; and unmarried girls above this age who have to learn some vocation and earn their livelihood. There is also the problem of the social education of women in general.

105. The task of arousing the consciousness of parents to the need of educating their children, particularly their daughters, should form an integral part of a campaign of social education. Organisation of parents-teachers' associations would also go a long way towards the promotion and betterment of education in general and women's education in particular. Other organisations like the Bharat Sevak Samaj can undertake propaganda work in this connection.

106. Special facilities have to be provided for meeting the special needs of girls above the age of eleven who, owing to social and economic conditions, are not free to remain in schools even if they want to do so. Methods should be found whereby such girls are given special

facilities for prosecuting studies beyond the primary stage at home and are allowed to sit for the secondary school leaving certificate examination privately. This is one agency through which girls may be encouraged to pursue secondary education.

107. Another agency also may be thought of. There are many voluntary organisations which hold their own examinations and issue certificates and diplomas to those who are successful. Free scope should be given for such voluntary effort and Government may, wherever possible and necessary, recognise these diplomas and certificates and aid all approved voluntary organizations. We would like to emphasise the point that in the period of transition through which the country is passing in regard to education there should be the fullest scope for experimentation.

108. There are girl students who are unable, after the completion of the secondary course, to proceed to universities. All the same, they are interested in higher studies and can in their leisure moments pursue such studies and pass the normal university examinations. There are some universities which admit such private candidates for their examinations and we recommend this practice for adoption by others. Part-time schools and colleges, extension lectures, etc., are at present a common feature of educational organisations in most countries in the world and should also be organised in this country. The courses should be based on a harmonious combination of theory and practice.

109. The problem of women's education in India is above all the problem of the education of grown-up women. Generally, women cannot always be educated in the same continuous fashion as men. Unlike boys, girls are forced to suspend their studies in the irearly teens due to a variety of reasons and take up wider responsibilities of the home. Arrangements should, therefore, be made to facilitate resumption of studies by women at a time when they have leisure. While it is found necessary even in the most advanced countries of Europe and America to organise education for the middle-aged woman, it needs no argument to stress the importance of providing similar facilities in a country like ours. Social service organisations have to take up the cause of their education and conduct short-term courses for general education as well as for training in crafts.

110. As regards the content of women's education the point that has to be stressed is that, apart from the requirements of the different courses which they may take up, women should learn everything which will enable them to discharge those functions which, as has been observed in the introductory paragraphs, legitimately belong to their special sphere of life. The large majority of them will become mothers and have to bring up their children and manage their household in an economical and efficient manner.

111. There is also another aspect of the content of women's education for which special provision has to be made. It is one of the objectives of planning for women's education that at the secondary and even at the university stage it should have a vocational or occupational basis, as far as possible, so that those who complete such stage may be in a position, if

necessary, to immediately take up some vocation or the other. The idea of the bifurcation of secondary education is now widely accepted and what is stressed here is to give it extensive application especially in the case of girls. Here, there should be co-ordination between planning for women's education and planning for cottage industries. Giving a vocational bias to women's education is also of additional value in so far as their energies will be directed to productive channels and should appreciably add to the national income of the country.

112. In the organisation of women's education the Girl Guide Movement has an important part to play. The movement at the present day is restricted to urban centres and even there its activities are not widespread. They do not reach all the girls in the locality but are restricted only to those who attend regular schools. What is needed is that the movement should bring into its fold all the girls in the urban areas and it should extend the scope of its operation into rural areas also. As an agency of social education it is potentially strong and any planning for women's education must make the fullest use of it.

113. There are also the beginnings of women's welfare movement in the country. In this connection, the step taken by the Madras Government in constituting a separate women's welfare department, administering a comprehensive programme, both in rural and urban areas, with the help of trained social workers and a large number of voluntary workers, is significant. The results achieved by the department are worthy of emulation by other State Governments. The Government of Uttar Pradesh, it is understood, has already followed suit. The Ministry of Rehabilitation at the Centre and some of the Departments of rehabilitation at the State level have also set up special divisions to deal with the problems of displaced women. The fullest use should be made of these departments for spreading education among women.

9. Other Problems

Labour and social service by students

114. Institution of compulsory social and labour service for students is being urged, both as a measure of educational reform and as a means of improving the quality of manpower. The idea briefly is that students of both sexes, between the ages of 18 and 22, except when exempted on medical grounds, should be called upon to devote a period of about a year to disciplined national service at such place and time, and in such manner, as the State may decide. The economic value of the product of such labour is not the chief consideration although the endeavour should be to increase constantly the efficiency of the work done so that it can become a source of real satisfaction, create a pride of achievement, and at the same time, make the scheme as nearly self-sufficient as possible. The primary aim of the period of training is, howevre, the building up of students as workers and disciplined citizens. The vast place which manual work occupies in the life of a nation should be reflected in the activities of every citizen and the dignity of manual labour should be realised in practice. These lessons ar ebest inculcated in the formative years of one's life as a student. A certain amount of manual work, as a part of the daily routine, and a short-term stay in a labour camp once a year, should be features of the curriculum throughout the educational period. At some stage during this period, for a considerable length of time, manual activity should figure as the major item in the day's routine of the student. This, it is believed, should not be less than six months but may extend to a year.

115. This service can take a variety of forms. It will develop significance in proportion to its relation to the real needs of the community. Community projects, irrigation works, buildings of public utility, roads, slum improvement, sanitation, etc., are among the avenues which are immediately open. Association of students with such works will bring them an intellectual and emotional awareness of the various tasks of national reconstruction, which are in progress.

116. The intention is that every student before he enters life goes through the period of training. For those who enter the universities, the end of the intermediate course would be the most suitable stage for participation in the scheme. It will cover a fairly large group and will operate at a time when the pressure of economic considerations is not as great as at later stages. In the absence, however, of sufficient experience of handling large bodies of students with economy and efficiency, the cost of introducing this scheme at this stage would be prohibitive. It is desirable, therefore, to begin with a small manageable group, for a period of three to six months ; and as experience is gained and more funds become available, to shift the incidence of the scheme to an earlier stage and extend the period of its operation.

117. Doubts have been raised regarding the desirability of introducing compulsion in this matter. They relate only to short-term difficulties and do not seriously touch any question of principle. A period of preparation and experimentation will be needed before the service can be put on a compulsory footing. Meanwhile, the scheme should be introduced on a voluntary basis with certain inducements. Those who go through such a course will naturally be more fitted for positions of responsibility. Organisers of this scheme should be as far as possible college professors for whose training adequate arrangements should be made. In this task, help should be sought of organisations like the Hindustan Scouts and Guides, Hindustani Talimi Sangh, colleges of physical education, the Bharat Sevak Samaj and other social service organisations. A provision of rupees one crore has been made in the Plan for implementing the scheme.

Teachers' salaries and conditions of service

118. One of the chief causes of the poor standards in the educational institutions is the low scales of salaries paid to teachers and the highly unsatisfactory conditions of their service. The Central Government have taken steps to improve them in the centrally administered areas and recently some States have also taken similar steps but on the whole conditions remain very unsatisfactory. We are convinced that no improvement in the existing system will be possible without improving the conditions of service of teachers and putting their remuneration on a fair basis of comparison with other services. We strongly recommend that every State Government should examine the position of teachers' salaries and, within the limits of their resources, endeavour o raise the scales of pay.

119. In view, however, of the large numbers involved and the strained resources of the State the relief that might be expected from this measure is not likely to be sufficient and it will have to be otherwise supplemented. Whenever possible additional facilities in the form of free accommodation, fee concessions for their children's education, etc., should be provided. In village schools attempt should be made to provide every teacher with a plot of land where he and his family can grow their own vegetables. While all measures should be taken to prevent the evil of private tuitions, avenues of useful educational work should be provided by which teachers can supplement their income and at the same time help the cause of educational improvement and expansion in their leisure hours. They could, for instance, be given the chance of participating in activities like conducting refresher courses of teachers of lower classes during vacation, organising extension services in universities, running evening classes for working children, undertaking social education work, etc., and paid extra allowance for the same. Besides adding to their income, participation in these activities should, in many cases, help to enrich the personality of the teacher concerned and improve his knowledge.

Physical and mental health

120. Proper provision should be made in educational institutions for maintaining the physical and mental health of students. Health education should form a compulsory part of the curriculum from the earliest stage to the end of the university career. Educational institutions should also be responsible for spreading health education in the community around. Norms of physical fitness—comprehending agility, strength and endurance—should be laid down for boys and girls at every stage of education. These norms should be worked out by experts and applied to different groups of people with due regard to variations in economic, climatic and other conditions. The course of the physical exercises calculated to help students to attain these norms should, however, be regulated by medical advice in each case. The attainment of these norms should be certified by a diploma which should be given some consideration in matters of public appointments and the like.

121. We would also recommend to the State Governments and other authorities the following measures in this connection :

(1) A National College of Physical Education for training the higher personnel for physical education and community recreation and leadership should be set up. The existing Central Institution for Physical Education in Bombay may be upgraded for the purpose.

(2) Suitable courses of physical education should be prepared and introduced in schools and colleges. These should provide for games and sports as well as suitable Yogic exercises.

(3) Adequate facilities for training of physical instructors should be provided. In teachers' training institutions physical education should be an essential subject. Short-term courses in physical education should also be organised for teachers.

(4) Research in physical education should be conducted, especially in regard to the following problems :

(*i*) the relative value of different sports, games and exercises from the physiological, social and educational points of view ;

(*ii*) the value of the Yogic system of exercises ; and

(*iii*) appropriate suitable syllabuses of physical education for different age and vocational groups.

122. As regards mental health the need for emotional stability should be recognised and the stabilising, ennobling and unifying influence of religion should be utilised for the purpose. In the earlier stages the moral truths common to all religions should be taught and emphasis laid on their practice. The University Education Commission has already made recommendations* in regard to the study of religion at the university stage.

10. Educational Programmes

Scope

123. The total allotment for educational development proposed in the Plan is Rs. 151·66† crores for the five-year period or an average annual expenditure of Rs. 30·33 crores. The total expenditure on education in 1950-51 was Rs. 63·16 crores of which Rs. 19·55 crores may be regarded as development expenditure. The increase from Rs. 19·55 to Rs. 30·33 crores a year represents an increase of nearly 55 per cent.

124. The expenditure provided under the head " Education " does not include the sum of Rs. 55·28 crores, during the five-year period or Rs. 11·06 crores annually on an average, proposed to be spent on a number of schemes of training, education and research, which are shown under other heads such as Agriculture, Medical, Industries, Labour, etc. The expenditure on such schemes in 1950-51 was Rs. 6·96 crores only. The Plan thus represents an increase of 58·9 per cent. The sums included directly under education (*i.e.*, Rs. 151·66 crores) are nearly 46 per cent of the total proposed expenditure on Social Services, which is Rs. 339·81 crores. The expenditure on education is nearly 7 per cent of the total expenditure of approximately Rs. 2,069 crores visualised in the Plan.

Distribution of expenditure

125. The distribution of the total expenditure visualised over the five years of the Plan among the various sub-heads will be as follows according to the schemes submitted by the Central Ministry and the States :—

(Rs. in lakhs)

State/Ministry	Administration	Primary Education	Secondary Education	University Education	Technical and Vocational Education	Social Education	Other schemes	Total
States	75·7	74,52·8	8,30·4	9,25·1	9,90·4	7,60·0	5,84·1	1,16,18·5§
Central Government .	...	12,50·0‡	‡	2,47·0	11,55·0	7,50·0‡	1,00·0	35,02·0
TOTAL (1951-56) .	75·7	87,02·8	8,30·4	11,72·1	21,45·4	15,10·0	6,84·1	1,51,20·5§
	(0·5%)	(57·6%)	(5·5%)	(7·8%)	(14·2%)	(10·0%)	(4·5%)	(100%)
Development expenditure in 1950-51	9.5	13,24 2	88·9	1,20·1	2,65·6	76·9	71·1	19,55·3
	0·5%	(67·7%)	(4·5%)	(6·2%)	(13·6%)	(3·9%)	(3·6%)	(100%)

* Ref. pp. 300-302, paras. 31-34 of the University Education Commission Report.

† This sum does not include the additional resources that the local bodies may be able to raise for the purpose.

§ Figures do not include Rs. 46 lakhs, earmarked for Jammu & Kashmir State, as break-up of this amount into sub-heads is not available.

‡ Some expenditure is visualised on Secondary Education, promotion of Federal and Indian languages, etc., out of Rs. 20 crores shown here under basic and social Education. Detailed break-up is not yet available.

The development programmes introduce no radical alterations in the overall structure of the educational system. The tendency in the pre-Plan period to broaden the base of the system has, as a matter of fact, been retarded. The percentage of development expenditure on primary education has fallen from 67·7 per cent in 1950-51 to 57·6 per cent during the period of the Plan. The need of the present situation, however, is as stated earlier, that the present emphasis on primary education should be considerably increased. Although it is not possible to introduce radical alterations in the pattern of expenditure in the short period of five years without serious dislocation, the programme should be revised wherever possible so as to lay much greater stress on primary education than has been done hitherto. Similarly the emphasis on technical and vocational education needs an upward revision.

Programmes of the Ministry of Education

126. The total expenditure proposed for the Central Ministry is, as stated above, Rs. 35·02 crores. Out of this provision, a sum of Rs. 5·72 crores* was provided in the budgets of 1951-52 and 1952-53. The provision for the remaining three years of the Plan would therefore be Rs. 29·30 crores at the average rate of Rs. 9·77 crores. The development expenditure of the Ministry in 1950-51 was Rs. 1·25 crores.

127. The provision of Rs. 35·02 crores is roughly divided into Rs. 20·00 crores for pre-university education, comprising mostly of basic and social education; Rs. 2·92 crores for university education ; Rs. 11·10 crores for scientific and technical education ; and Rs. 1 crore for youth camps and labour service for students. A large number of the schemes contemplated are intended to be carried out in the States which are willing to co-operate and jointly share financial responsibility with the Centre in such proportions as may be agreed upon. The various types of schemes contemplated are shown below :

(*a*) For pre-university education the Centre has the following schemes :—

(1) *Basic and primary education*—Complete units of basic education, from the pre-basic school to the post-graduate basic training college, will be set up, at least one in each State. Research in the problem of methods and curricula, with a view to improve them, will be one of the special functions of these units and results achieved by them will be made available to all basic institutions of the country in a systematic manner. The training colleges of these units will train teachers for junior and senior basic schools. Each of these units will also be a community centre as well as a research centre where the impact of a complete unit of basic education on the whole life of the community will be studied. Ordinary primary schools in the area in which a basic unit is set up will also be helped to improve their standards.

(2) *Social education*—Janata Colleges will be established, at least one in each State, for experimental purposes. Their main object will be to train social education workers, community organisers and administrators. When some of these colleges are no longer needed for this training they will be turned into rural colleges. These colleges will also serve as

* The revised estimates for 1951-52 were Rs. 1·49 crores and the budget estimates for 1952-53 were Rs. 4·23 crores.

community centres. An attempt will also be made to establish at least one school-*cum*-community centre in each district. The Janata Colleges will be opened in association with the units of basic education mentioned above. Library service will also be integrated with these institutions. The aim of concentrating all these institutions in one area is to attempt the intensive educational development of that area.

(3) *Secondary education*—At least one multi-lateral high school will be opened as a pilot institution in each State, if necessary with suitable Central aid. These schools will have not only sections for liberal arts and sciences but also sections for technical education, commerce, agriculture, etc. Occupational schools, particularly for children between the ages of 14-18 will also be established, where possible, for experimental purposes. Grants will be given on a non-recurring basis to such experimental schools conducted by the States if they satisfy the necessary conditions. Research bureaus devoted to the study of problems of secondary education will be established at secondary training colleges or universities. Merit scholarships will be provided in existing public schools to enable able but poor students to obtain the benefits of these institutions.

(4) *Audio-visual aids*—Production of these will be encouraged by establishing a unit at the Central Institute of Education which will co-ordinate the efforts of research workers and teachers in this field all over the country. The State Governments, private firms and publishers will be assisted in producing simpler audio-visual aids. These aids will be for use in primary and secondary schools as well as in social education work.

(5) *Experiments*—Grants will be given to the State Governments and to voluntary and private organisations for carrying out important educational experiments.

(6) *Training*—Grants will be given to the State Governments for the training of basic teachers and social education workers. There are schemes for training the personnel for organising selective tests and providing vocational guidance.

(7) *Literature*—The Central Ministry of Education will produce selected model literature and encourage various firms and publishers to produce reading material. The literature which will be produced will be for children, for social education, for basic education well as for secondary schools. Competitive prizes and awards will be given to encourage as the production of this literature and audio-visual aids.

(8) *Indian and federal languages*—Original works as well as translations in various Indian languages will be assisted. Steps will be taken to promote the federal language. In the first instance, dictionaries, encyclopaedias and other reference books will be produced by the Central Ministry.

(9) *Juvenile offenders*—Pilot centres will be established for the treatment of juvenile delinquents and defectives.

(*b*) For technical education a provision of Rs. 11·10 crores has been made. Out of this amount a sum of Rs. 7·55 crores will be spent on schemes which are already in progress. They include schemes for the development of the Indian Institute of Technology, Kharagpur, and the Indian Institute of Science, Bangalore. Both these schemes are calculated to make up for the deficiency of facilities for post-graduate and research work in this country. The scheme for the development and expansion of 14 engineering institutions is expected to give tone primarily to under-graduate work where there has been expansion in recent years without proper provision of teachers, equipment, buildings, etc. The practical training stipends scheme is calculated to help to make up the deficiency of practical training among the products of technical institutions in our country. Out of the balance of Rs. 3·55 crores, money will be found for further helping post-graudate courses and advanced research work ; for providing facilities for the study of special subjects like technical training in printing, processing of woollen and silk fabrics, etc., at the under-graduate level; for training in architecture and town planning ; for developing facilities for part-time courses at the various levels; for providing for teachers' training ; and finally for construction of hostels.

(*c*) A sum of Rs. 2·92 crores has been provided for helping universities in the study of science and humanities. Out of this another a sum of Rs. 20 lakhs has been earmarked for helping libraries in universities and Rs. 45 lakhs for the research training scholarship scheme.

(*d*) The establishment of a National Central Library at New Delhi is also under consideration.

Programmes of the State Governments

128. The expenditure proposed in the States' sector is Rs. 116·65 crores, or an average annual expenditure of Rs. 23·33 crores, which represents an increase of 27 per cent over the development expenditure of Rs. 18·31 crores in 1950-51. The scope of the expenditure in the States' sector is increased by the fact, already stated, that the major share of the expenditure of the Ministry of Education is to be incurred in the various States.

129. The types of schemes which State Governments have submitted under different heads are as follows :—

(1) Schemes of primary education include improvement of existing primary schools and opening of new ones, conversion of primary into basic schools and opening of new basic schools. Under improvement of existing primary schools are schemes for the improvement of buildings, the provision of play-grounds, the improvement of salaries of teachers, and the training of additional teachers. There are programmes for the training of basic teachers, whether newly recruited or taken from existing schools for refresher courses. Buildings and equipment for basic schools to be opened have also been provided for. There are schemes for extending primary education to rural and other backward areas.

(2) Schemes for secondary education include those for opening of new secondary schools and improvement of existing ones. There are schemes for opening both middle and high schools. Improvement schemes consist of provision for buildings, equipment and staff, as well as for upgrading of primary to middle schools, middle to high schools and high schools to intermediate colleges. New subjects like physical education, military training, gardening and agriculture, music, etc., are sought to be introduced in some schools and

there are schemes for training of teachers in some of these subjects. There are schemes for maintenance of model schools. Some States have special schemes for extending secondary education for girls. A number of States have sought to provide playgrounds for secondary schools. In States where new areas have been merged, special provision has been made for extending education to those areas.

(3) Schemes for university education include opening of new universities and colleges, and improvement and expansion of existing colleges. Improvement schemes consist mostly of improvement of buildings and equipment. Expansion schemes involve opening of new classes of higher standard for new, mostly scientific, subjects. Provision for scholarships to meritorious students and for research has also been made.

(4) Schemes of social education include schemes for libraries, physical education and youth activities, audio-visual education, literacy and adult education centres, social education among women, etc. There are no schemes for the training of social education workers, organisers and administrators. The Central Government, however, have plans for providing these training facilities in co-operation with the State Governments.

(5) Schemes of technical and vocational education include those for encouraging technical and vocational education at all levels. At lower levels there are schemes for opening craft schools, converting craft schools into junior technical high schools, for survey and opening of junior polytechnics, for organising technical and vocational education in middle schools, for conversion of secondary schools into technical high schools, for organisation of diploma courses, for opening industrial schools and agriculture bias schools, etc. Hitherto craft centres have been opened only in towns. In the working of the Plan care should be taken to provide rural training centres [reference para. 78] as well.

At higher levels we have the upgrading of some commercial and technical schools into colleges, opening of new technical colleges, grants to existing technical institutions, giving stipends to students for studies abroad, etc.

(6) *Administration, direction and inspection*—The expansion of educational activities would necessitate the strengthening of the headquarters staff as well as the inspectorate staff. The introduction and extension of basic education and technical and vocational education has made the addition of special staff necessary. Various schemes have been provided for improvement of administration, direction and inspection.

(7) Besides the schemes mentioned above, there are schemes for further education of ex-Service personnel, for development of regional languages and literature, for the education of the handicapped, for setting up the National Cadet Corps in colleges, for the improvement of special fields of education as oriental education, statistics, etc. There are schemes for the training of the personnel abroad.

Results of the programmes

130. The results of the above programmes as estimated on the basis of State resources proposed to be spent are shown in the statement on pages 568 and 569 and are summed up below:

(1) In the field of primary education the number of primary schools will increase by 17 per cent and the number of pupils by 25 per cent. The corresponding increase in the junior basic

schools would be 22 per cent and 81 per cent. Taking the primary and junior basic schools together, we find that whereas in 1950-51 only 44·5 per cent of the children of the age group 6-11 were being provided for, the percentage is estimated to rise to 55·7 per cent in 1955-56. This result is estimated only on the basis of the State resources. We feel that it can be considerably improved if local resources are properly developed and tapped for the purpose of education. Though firm estimates are impossible at this stage it should not be difficult to reach the target of 60 per cent. Again if crafts are introduced in primary and middle stages and the training in them is properly handled it should be possible to add the three senior classes to primary (or junior basic) schools without any appreciable addition to the cost, which should enable us to improve considerably the results in respect of the children of 11-14, and which will favourably affect the estimated results in regard to secondary education mentioned below. Besides those who go to regular schools a large number of properly directed children's clubs run with voluntary help, especially of students, should be able to spread, as already stated, some of the essentials of education among a large number of children who cannot go to school or for whom schools are not provided.

(2) In the field of secondary education while secondary schools are estimated to increase by 18 per cent during the period of the Plan the number of pupils would increase by 32 per cent. The percentage of the age-group 11-17 being provided for will increase from 10·8 per cent in 1950-51 to 13·3 per cent in 1955-56.

(3) In the case of technical and vocational education (other than industrial schools), although the percentage increase (57 per cent in the case of institutions and 63 per cent in the case of number trained during the year) is very striking, it has to be viewed against the present poor provision. The case with industrial schools is similar.

(4) As regards teachers, training facilities expand differently at different levels. While the number trained during the year increases only by 15 per cent in the case of primary teachers, it increases by 54 per cent in the case of secondary schools and 162 per cent in the case of basic teachers. The low percentage increase in the case of primary teachers is explained by the fact that with the policy of ultimately converting all primary schools into basic schools most of the States are taking steps to convert their primary teachers' training colleges into basic training colleges. It may be said that a high percentage of development of training facilities at all levels is contemplated during the Plan period. But the existing facilities are so insufficient that this increase does not make much impression on the present situation where a very high percentage of teachers are untrained. The percentage of untrained teachers in 1950-51 was 37 in the case of primary schools, 45 in the case of junior basic schools and 44 per cent in the case of secondary schools. As a result of expansion of training facilities the percentage of trained teachers will rise by 3, 15, 6 per cent, respectively in the cases of primary, junior basic and secondary teachers.

(5) The highly unsatisfactory situation in regard to girls' education does not improve appreciably and the programmes need to be revised to lay sufficient emphasis on this very important aspect of the educational problem.

PROGRESS OF

(According to programmes

Year	Primary (ordinary)					Junior Basic				
		Pupils		Teachers			Pupils		Teachers	
	No. of institutions	Total No.	Percentage of girls	Total number	Percentage of trained teachers	No. of insttiutions	Total number	Percentage of girls	Total number	Percentage of trained teachers
1	2	3	4	5	6	7	8	9	10	11
1950-51 •	1,72,779	1,51,10,316	30	3,86,169	63	35,002	29,00,322	8	77,013	55·0
1955-56 •	2,02,141	1,87,88,750	32	4,60,324	66	42,833	52,76,278	13	1,11,893	70·3
Percentage of increase in 1955-56 over 1950-51.	17	25	2	19·2	3	22	81	5	45	15

NOTE : Figures for Hyderabad, Kashmir, Rajasthan, Ajmer and Vindhya Pradesh are not included, unless otherwise specifically stated. Other States excluded under various heads are mentioned below :—

(1) Figures for Uttar Pradesh are not included.

(2) Figures for Uttar Pradesh are not included.

(3) Figures for Madhya Pradesh, Uttar Pradesh and Mysore are not included.

(4) Figures for Madhya Pradesh, Uttar Pradesh and West Bengal are not included.

(5) Figures for Madhya Pradesh, Uttar Pradesh and West Bengal are not included.

(6) Figures for Madhya Pradesh, Travancore-Cochin and Coorg are not included and those for Rajasthan are included.

(7) Figures for Madhya Pradesh and Coorg are not included.

(8) Figures for Madhya Pradesh, Madras, Madhya Bharat, Mysore, Saurashtra, Travancore-Cochin, Bhopal, Coorg, Himachal Pradesh, Kutch and Tripura are not included.

(9) Figures for Madhya Pradesh and Coorg are not included.

(10) Figures for Madhya Pradesh and Coorg are not included,

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submitted by State Governments)

No. of institutions	Secondary Pupils		Teachers		Technical and Vocational (excl. Industrial Schools)		Industrial Schools		Training of Teachers (number trained during the year)		
	Total number	Percentage of girls	Total number	Percentage of trained teachers	No. of institutions	Number trained during the year	No. of institutions	No. trained during the year	No of Primary trained	Number of Secondary trained	Number of Basic trained
12	13	14	15	16	17	18	19	20	21	22	23
16,387	43,87,657	19	1,63,575	56	260	26,702	365	14,750	27,927	9,516	5,370
19,262	57,79,395	16	2,06,856	62	407	43,603	456	21,797	32,212	14,666	14,045
18	32	—3	26	6	57	63	25	48	15	54	162

(11) Figures for Rajasthan included.

(12) Figures for Madhya Pradesh, Mysore and Manipur are not included.

(13) Figures for Madhya Pradesh are not included.

(14) Figures for Madhaya Pradesh are not included.

(15) Figures for Orissa, Pepsu, Himachal Pradesh, Coorg, Manipur and Tripura are not included. Figures for Hyderabad are included.

(16) Figures for Orissa, Pepsu, Coorg, Manipur and Tripura are not included. Those for Hyderabad are included.

(17) Figures for Bihar, Saurashtra and Part 'C' States are not included. Those for Rajasthan and Hyderabad are included.

(18) Figures for Bihar, Saurashtra and Part 'C' States are not included. Those for Hyderabad are included.

(19) Figures for Travancore-Cochin, Bilaspur, Coorg and Tripura are not included.

(20) Figures for Coorg, Delhi, Kutch and Tripura are not included.

(21) Figures for Uttar Pradesh, Travancore-Cochin, Coorg, Kutch, Manipur and Tripura are not included.

CHAPTER XXXIV

LABOUR

Our approach to labour problems rests on considerations which are related on the one hand to the requirements of the well being of the working class and on the other to its vital contribution to the economic stability and progress of the country. The worker is the principal instrument in the fulfilment of the targets of the Plan and in the achievement of economic progress, generally. His cooperation will be an essential factor in creating an economic organisation in the country which will best subserve the needs of social justice. Certain rights and obligations are associated with this distinctive role.

2. Adequate provision has to be made for the basic needs of the workers in respect of food, clothing and shelter so as to enable them to remain in a state of health and efficiency. Besides the satisfaction of these basic needs, they should have their due share in social and economic progress in the shape of improved health services, wider provision of social security, better educational opportunities and increased recreational and cultural facilities. The workers must, of course, as members of the community have the full benefit of the social services and facilities available to any other section. Appropriate measures must, however, be taken to meet their peculiar difficulties and to remove their special handicaps.

3. The conditions of work should be such as to safeguard the worker's health and protect him against occupational hazards. The work-place should provide reasonable amenities for his essential needs. The worker should also be equipped with the necessary technical training and a certain level of general education. Having placed his assets—labour and skill at the disposal of the community, he should be assured of a reasonable measure of security against the various natural and other risks to which he is exposed. In his relations with the management, it is necessary that he should be treated with consideration. When he feels he cannot get a fair deal from his employer, he should have access to an impartial machinery set up for the purpose. The worker must be free to organize and to take lawful action in furtherance of his rights and interests. The community has recognised most of these rights, which have found a place in the Constitution.

4. The Central and State Governments have been alive to all these needs of workers. Some of the laws pertaining to factories, trade unions, workers' compensation for injuries and death have been in existence for a long time, but the pace of action has quickened since Independence. The Ministry of Labour at the Centre, in particular, have made strenuous efforts to promote the well-being of the working class on the basis of a planned programme with legislative and administrative measures, much of which has been successfully carried out. In the sphere of labour legislation undertaken recently mention may be made of the Industrial Disputes Act, 1947, the Factories Act, the Coal Mines Provident Fund and Bonus Scheme Act, the Minimum Wages Act, the Employees' State Insurance Act of 1948, the Plantation Labour

Act, 1951, the Mines Act and the Provident Fund Act of 1952. Some of these Acts have already come into operation while others are being put in force. A number of welfare schemes particularly for employees of mines and of Central Government undertakings have been introduced by the Ministry. Housing for industrial workers has made a modest beginning. Effect is now being given to the recommendations of the Commission for participation by Government in this activity on a much larger scale. In addition to the funds allotted to housing and to resettlement schemes of landless agricultural workers over 6·74 crores of rupees* are intended to be spent on labour welfare during the period of the Plan, both by the Central and State Governments. Tripartite bodies have been set up to advise Government on various labour matters. Advisory Boards are working in many States. The employment position in factories has been much better during recent years as compared to the two years immediately after the end of the war. The average annual earnings of factory workers have shown a steady increase. Trade unionism has experienced a remarkable growth during these years but the qualitative progress has not been even.

5. The response of the workers to these measures has been satisfactory. Noticeable increases in production have been recorded in a number of industries during last year and the first half of this year. Strike activity has considerably diminished. The number of man-days lost last year was the lowest among the years of the post-war period. There is increasing evidence of the relations of mutual dependence and the need for direct dealings on the part of the representatives of the workers and the employers. The emergence of the Joint Consultative Board as a bi-partite structure on the initiative of the top representatives of the working class and industry is a welcome advance. The tendency to rely more and more on internal settlement was manifest during and strengthened by the proceedings of the Indian Labour Conference held recently.

6. Greater improvement in the economic condition of workers has, however, been impeded by a rising price level and failure of the industry to renovate and modernise plant and rationalize management in many cases. In this context it is, however, to be realized that rate of progress has to be determined not only by the needs of the workers but also by the limitations of the country's resources. Too rapid changes or changes on a wide scale may result in financial, administrative and other difficulties which endanger new reforms and retard further development. On the side of labour, there should be a keen realisation of the fact that in an undeveloped economy, it cannot build for itself and the community a better life except on the firm foundations of a higher level of productivity to which it has itself to make a substantial contribution. The role of labour in promoting better standards of living for the community involves acceptance of greater regularity in attendance, disciplined behaviour and meticulous care in discharge of duties. To ensure this, much greater attention has to be paid to the spread of literacy and the healthy development of trade unions so that workers are not exposed to exploitation and can act with greater sense of responsibility.

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*This includes in the case of some States the normal administrative expenditure for implementing labour legislation.

7. Industrial relations, wages and social security, working conditions, employment and training and productivity are among the important aspects of the labour problem in respect of which the Commission proposes to make specific recommendations.

I. Industrial Relations

It is proposed to deal here with industrial relations both in the private and public sector. The role the trade unions and employers' organisations have to play in the implementation of the plan also requires to be specifically stated. The recommendations in this section have, therefore, been grouped under the following heads : (A) Private sector, (B) Public sector, (C) Role of trade unions and employers' organisations in a planned economy.

A. Private Sector

8. Harmonious relations between capital and labour are essential for the realization of the targets of the Plan in the industrial sector. This would be assured to a large extent if it were possible for management and labour to come to an agreement regarding the principles which should govern industrial relations. To this end the Planning Commission worked out certain proposals in consultation with the Ministries of Labour and Commerce and Industry on the basis of which agreed conclusions have been reached in the Industries Development Committee composed of representative employers and leaders of the principal workers' organisations in the country. These agreed conclusions are reproduced below :—

The approach

9. Peace in industry has a great significance as a force for world peace if we consider the wider implications of the question. The answer to class-antagonisms and world conflicts will arrive soon if we succeed in discovering a sound basis for human relations in industry. Economic progress is also bound up with industrial peace. Industrial relations are, therefore, not a matter between employers and employees alone, but a vital concern of the community which may be expressed in measures for the protection of its larger interests.

10. In a community organised for social justice and the good of all its members, there would be a constant reconciliation of the interests of all sections and no legitimate occasion for a group to interfere with production or disorganise the life of the community should arise. Even where the workers and employers are ranged in opposite camps, the essential oneness of their interests over a wide area of the mutual relation of the parties is evident. But there is doubtless also a very considerable ground over which conflicts may arise. The employer usually possesses superior strength which may become a source of injustice and oppression unless he is imbued with a high sense of fairness and uses his advantage with scrupulous regard to the rights and interests of others. In an economy organised on the basis of competition, private monopoly or private profit, the workers' right to have recourse to peaceful direct action for the defence of their rights and the improvement of their conditions cannot be denied and should not be curtailed unduly. It is generally accepted, however, that in any emergency and in the case of services, essential to the safety and well-being of the community recourse to a

strike or lock-out may be suspended or withheld on the condition that in all such cases provision is made for a just settlement of the parties' claims. Experience of many years has demonstrated that in the majority of labour struggles, owing to the ignorance and the mistakes of the workers and their organizational and bargaining weakness they have failed to gain their ends irrespective of the merits of the disputes. The community has, therefore, to intervene for redressing the balance in favour of the weaker party to assure just treatment for all concerned. Legal provisions relating to trade unions and industrial disputes have to be framed and interpreted in relation to these objectives. On occasions the workers too make an unreasonable use of their strength. Whatever may be the apparent outcome of a labour conflict, the resulting loss far outweighs any advantage secured by a party and in most cases all concerned stand to lose.

11. In normal times and in ordinary cases whether the right to strike or lock-out should be circumscribed is an open question. An economy organised for planned production and distribution, aiming at the realisation of social justice and the welfare of the masses can function effectively only in an atmosphere of industrial peace. India is moving in this direction. It is also at present passing through a period of economic and political emergency. Taking the period of the next few years, the regulation of industrial relations in the country has to be based on these two considerations and it is incumbent on the State to arm itself with legal powers to refer disputes for settlement by arbitration or adjudication, on failure of efforts to reach an agreement by other means. However, the endeavour of the State has all along to be to encourage mutual settlement, collective bargaining and voluntary arbitration to the utmost extent, and thereby to reduce to the minimum occasions for its intervention in industrial disputes and the exercise of the special powers. The restrictive aspects of any existing or future labour legislation must be judged in the light of these considerations.

12. The employer-employee relationship has to be conceived of as a partnership in a constructive endeavour to promote the satisfaction of the economic needs of the community in the best possible manner. The dignity of labour and the vital role of the worker in such a partnership must be recognised. In dealing with the worker it has not only to be borne in mind that his energy and skill are the most precious assets of the nation, but also that his personality is an object of care and respect and of equal significance and worth with that of any other element in the community. It may be that the worker on account of handicaps of illiteracy and ignorance and lack of opportunities is not able to play as effective a role in the working of industry as he should. Industrial relations have to be so developed that the worker's fitness to understand and carry out his responsibility grows and he is equipped to take an increasing share in the working of industry. There should be the closest collaboration through consultative committees at all levels between employers and employees for the purpose of increasing production, improving quality, reducing costs and eliminating waste.

13. The worker's right of association, organisation and collective bargaining is to be accepted without reservation as the fundamental basis of the mutual relationship. The attitude to trade unions should not be just a matter of toleration. They should be welcomed and helped to function as part and parcel of the industrial system.

14. If any differences arise between the parties, they should be examined and settled in a spirit of reasonable adjustment with an eye to the good of industry and the well being of the community. In the last resort differences may be resolved by impartial investigation and arbitration. The intervention of the State and imposed settlements may become necessary at times. The stress of the administration as well as the efforts of parties should, however, be for avoidance of disputes and securing their internal settlement.

15. The machinery and procedure relating to compulsory arbitration and adjudication of disputes should be so designed as to secure the essence of a fair settlement based on the principles of natural and social justice with the minimum expenditure of time and money. To achieve the aforesaid aims, statutory provisions in this connection should be framed in accordance with the following principles :

(*i*) Legal technicalities and formalities of procedure should be reduced to the minimum, the relevant facts and figures should be furnished quickly and attention should be focussed on the material points in issue.

(*ii*) The machinery and procedure should be adapted to the varying needs. Every dispute should be taken up for final disposal directly at a level suited to the nature and importance of the case. Relatively simple or less important matters should not entail a disproportionate expenditure of time and attention.

(*iii*) Selection, recruitment and training of the personnel of the courts or tribunals should be carried out with a view to securing competent disposal of the question coming up before them and the requisite technical help should be provided to obtain speedy settlement and to avoid miscarriage of justice.

(*iv*) There should be no appeal from decisions of an industrial court or tribunal, barring the very exceptional case of a decision which may be found to be perverse or against the principles of natural justice.

(*v*) The provisions of law should be adequate for securing strict and prompt compliance with the term of any award or decision.

16. Industrial arbitration differs fundamentally from the ordinary administration of justice. In the latter case the law of the land has pre-determined the rights and obligations of the parties and the courts have only to interpret and apply the provisions of the statutes. A wide element of discretion, however, rules the decisions of industrial tribunals, because there are no established criteria for settling the issues which arise before them. It is possible that case law on those points will grow in course of time, but in matters affecting large economic interests it would be a very unsatisfactory procedure to leave the ' norms ' and the guiding policy to be settled by such a process of trial and error. The resolution on Industrial Truce adopted at the Industries Conference in December 1947 visualises the establishment of a machinery for the determination of ' norms ' and standards which may govern the mutual relations and dealings between the employers and employees and the settlement of industrial disputes. The most suitable machinery for the purpose can only be a tripartite body consisting

of representatives of employers, employees and Government. It may be expected that agreements will be reached on many contentious matters, but where this is not possible the Government may, with such expert assistance and judicial advice as is needed, itself arrive at decisions. These agreements or decisions may, according to the nature of the case, be issued as directives binding on the courts or the tribunals, or embodied in legislation.

17. There is need for continuous education of employers and employees as well as the public with regard to their duties and mutual obligations. The conduct of the parties must be in keeping with the objectives of the Constitution and the declared social policies of the State. Enlightened and active public opinion capable of mobilising itself on the side of justice and fairplay should be counted upon as a much more potent force for the maintenance of healthy industrial relations than the coercive powers of the State.

18. It should be realised that while the economic aspects are important we are basically dealing with a human, psychological and social problem. The key to industrial peace lies ultimately in a transformed outlook on both the sides and it should be the business of leadership in the ranks of labour and employers as well as in Government to strive to work out a new relationship among the parties in accord with the spirit of true democracy. Where the State is itself the employer the relations between the management and the employees should be so ordered as to offer an example of sustained mutual goodwill and fruitful collaboration.

Avoidance of disputes

19. In order to avoid needless friction, and disputes between employers and workers, it is necessary to lay down in concrete and specific terms the duties and responsibilities of either side. A worker should know what is expected of him in the particular occupation or capacity in which he is employed. He should also know the privileges which are due to him, in relation to the performance of his duties. The standing orders, which are now obligatory in case of most industrial establishments, cover some of this ground, but there are other matters concerning the relations between the parties and the precise range of duties of operatives in which some guidance may usefully be provided. Each undertaking should, therefore, adopt a manual of instructions for different classes of operatives of the type in vogue in some Government offices and commercial establishments. Such manuals should be prepared, and when necessary revised, by tripartite consultation.

20. Elected representatives of workers function as shop-stewards in some establishments at present. This agency should be developed and fully employed for redressal of grievances of workers in their individual and collective capacity.

21. An employer should in consultation with the workers lay down clearly the manner in which any worker or group of workers, individually or collectively through their representatives, may approach authorities at different levels in the plant in respect of various types of grievances. Such procedure should be as uniform as possible for different workers in the same industry at the same centre. Suitable records may be maintained for this purpose wherever necessary. It should be open to an individual worker or his representative in due course to approach the highest executive on the spot, in the last resort. By suitable means the workers should be

kept in touch with the state of the industry and the affairs of the establishment in which they are employed. This applies particularly in matters which concern them directly. The workers should be apprised in advance, in all feasible cases, of any contemplated change which may alter the *status quo* relating to their conditions and interests. The employees must similarly indicate their desire for any change in the existing conditions. The observance of such a procedure will prevent precipitate action which often leads to avoidable trouble. Direct action on either side in violation of this obligation should be punishable under the law.

22. The standing orders should embrace all matters of routine industrial administration and any diffreences between the parties regarding the terms of the standing orders should be resolved by arbitration. Model standing orders should be framed officially for the purposes of guidance and to operate till they are settled in accordance with the prescribed procedure. Arrangements should be made for registration of agreements at whatever stage they are concluded between the parties, with the explicit provision that any dispute regarding the interpretion of the terms of the agreement will be referred to arbitration.

23. Social contacts, not of a patronising character but as among members of an industrial family, should be promoted for all those associated with the working of the establishment at any level. The supervisory staff and the technicians have a special position of advantage for taking the intitative in establishing a spirit of brotherhood and cordial relations. The personnel officers on the staff, usually designated as labour or labour welfare officers, have a special responsibility for the avoidance of disputes and creating mutual goodwill and understanding. In a number of cases owing to wrong selection, lack of proper equipment or training and a wholly misconceived view of their role on the part of the employer, these officers have failed to render very useful service and have, on the other hand, accentuated distrust and ill-will between the parties. Remedial action in this matter in which the State may assist should be under taken by organisations of employers without delay. It will be found helpful if joint committees at various levels periodically review the developments in industry and working conditions and other matters of common interest.

Internal settlement

24. The informal approach visualised so far may not succeed in disposing of all the differences which arise between the employer and the employees in an establishment. Questions also arise which affect the common interests of the workers engaged in an industry and which must properly be pursued on a collective basis. Efforts for the settlement of such disputes may be pursued in a coordinated manner either through a suitable machinery for joint deliberations or by collective bargaining between the representatives of organised labour and of the employer or a group of employers as the case may be.

25. *Joint committees*—Works committees for the settlement of differences on the spot between the workers and the management is the key of the system of industrial relations as conceived in this Plan. Joint committees should also be set up for a centre and for the industry as a whole to tackle questions of wider import. These committees will be the best vehicle for improving labour relations and promoting employer-employee collaboration in

the interests of high production and greater well-being of the workers through the progress of industry. It will not suffice to provide for the creation of joint committees either on a voluntary or compulsory basis. When a new institution of such a high significance has to be developed, active steps must be taken to foster it and to create conditions conducive to its healthy growth.

26. The successful functioning of works committees rests a good deal on the initiative, sympathy and interest of the management. The supervisory staff should be encouraged to lend a helping hand. There should be periodic review of progress of works committees. The circumstances hampering the operation of a committee in any unit should be examined carefully and every effort should be made to remove the hindrances. The works committee is in no sense to be a rival of the trade union. Every effort should be made to secure the support and co-operation of the latter in the conduct of the works committees. The personnel of the works committees on the side of the workers should invariably be chosen by the trade union enjoying a representative character and having the backing of the majority of the workers in a unit. In all other cases the workers should themselves elect their representatives on the works committees. It should be open to a union official or a Government Labour Officer to assist in the proceedings of the committees at the invitation of either party.

27. The committees while being free to take up any matter coming within the range of industrial relations should, in order that they may grow in strength, have a list of specified functions. All questions relating to amenities, working conditions, matters of discipline, quality of materials etc., should be necessarily dealt with by these committees. A works committee cannot of course take any decision which may diverge from the terms of a collective agreement and its decisions regarding matters lying within the scope of collective agreement should be subject to the ratification of the management and the organisation of labour possessing the bargaining rights for the purpose.

28. A works committee is ordinarily the culminating step in the grievances machinery designed to function within a unit and there may be a separate committee for the purpose of collaboration in dealing with matters specially relating to production. It may, in certain cases, be found more convenient to entrust the works committee with the functions of a production committee.

Collective bargaining

29. Collective bargaining can derive reality only from the organised strength of the workers and a genuine desire on the part of the employer to co-operate with their representatives in exploring every possibility of reaching a settlement. A legal framework may, however, be created to determine the appropriate bargaining agency and to fix the responsibility for the enforcement of collective agreements. For the success of collective bargaining, it is essential that there should be a single bargaining agent over as large an area of industry as possible and uniform conditions should be secured in at least all the establishments in one centre. Where no trade union has built up the requisite strength to obtain a representative character, the largest union should have the right to function in respect of all establishments in which it has a majority of the workers as its members. Separate unions for industrial

establishments in the same industry in a local area are inimical to the growth of a strong and healthy trade union and their existence may be justified only in very exceptional circumstances. Provision has to be made for the direct election of representatives of workers from among the employees when no trade union exists or is able to secure the right to represent them. While it is preferable to have a single industrial union covering all the occupations in an industry, latitude may be permitted for special categories of salaried employees to form their own unions if the majority of these employees are in favour of such a course. In the absence of all other agencies arrangement has to be made by the State for the appointment of officials to look after the interests of the workers in industrial disputes.

30. To the bargaining status of the parties would naturally be attached certain obligations, especially with regard to non-participation in illegal strikes and illegal lock-outs.

31. An elaborate procedure relating to the representation of employees and employers may not be easily applicable to small and less advanced industries and a simpler alternative should be available for such cases.

Conciliation and enquiry

32. The State has to step in with an offer of conciliation when the parties fail to reach an agreement and the dispute continues. Conciliation should be made available in all such disputes and must be resorted to except when there is a voluntary submission for arbitration or a direct approach to a tribunal or court is permitted or prescribed. The conciliation officer has an important role for which he should be adequately equipped and trained. For cases involving major issues *ad hoc* or standing conciliation boards may be appointed. The board should be composed of an independent chairman and persons in equal numbers to represent the interests of the parties. Panels of non-official conciliators may also be formed. Conciliation proceedings should be carried on in a completely informal atmosphere and concluded as quickly as possible within a fixed time limit. A court or a tribunal should not take cognizance of what transpires in conciliation proceedings.

33. It may be useful in certain cases to have recourse to an official enquiry for the purpose of avoiding disputes, eliciting information or educating public opinion regarding the merits of a dispute. A court or a commission of enquiry may be set up for this purpose.

Arbitration

34. Adequate machinery should be provided for arriving at impartial decisions regarding disputes which are found incapable of settlement by conciliation. It is necessary to empower labour courts to take cognisance and dispose of any complaints relating to working conditions, health, safety, welfare and kindred matters. Reference of disputes relating to such crucial questions as wages, hours, rationalisation schemes should, as far as possible, be left to be settled by conciliation or voluntary arbitration. The State may however, have to refer such disputes for compulsory arbitration in the absence of a voluntary submission. Employers and trade unions may be encouraged to bind themselves in advance to submit to arbitration every industrial dispute in which a settlement is not reached by conciliation and not to sanction or resort to a

strike or lock-out as the case may be which is not legal and in respect of which all the legal methods for the settlement of an industrial dispute have not been exhausted. Such employers and unions should be in a position to make a direct approach to the machinery set up by statute for the purpose of compulsory arbitration. The most honourable and patriotic course for employers and employees would be to agree to submit any present or future dispute or classes of such disputes to arbitration of any person or board of their choice. The number of such agreements would be a good index of real progress in industrial relations in the country. The apparatus of arbitration must be adjusted to suit a variety of needs. For important industries separate wage boards would be found very helpful. Such wage boards may also be established at the centre to which issues affecting an industry in the country as a whole may be referred. A central tribunal should be set up to deal with disputes of national importance.

35. The cause of industrial peace has not been helped by the manner in which the legal machinery has functioned in several industrial disputes. There is a widespread feeling that excessive delays occur and the judgments in several cases lack balance and are incapable of meeting the true requirements of the situation. The remedial action already outlined here would go far to set things right. A considerable factor in the length of proceedings will be eliminated if the party making a claim submits its complete case at the start, furnishing a copy to the opposite party simultaneously. Similarly when conciliation fails a statement signed by the parties offering to submit their differences to arbitration may straightaway operate as a submission, to obviate delay.

36. The work of the industrial and labour courts suffers in quality and speed of disposal because the necessary information is not readily available. In part the State can itself fill the gap by preparing in advance the factual and statistical material which, in the light of experience, is found to have a bearing on the various types of cases which come before the courts. The State should have the power to require any employer or employers generally to maintain and furnish data relating to plant, manufacture, industrial transactions and dealings which might be needed for the settlement of industrial disputes. The balance sheets of industrial concerns have often to be cited. They should be supplied to the authorities in a suitable standardised form as soon as they are ready. Provision for this may be made in the Companies' Act in which there should also be adequate safeguards to ensure that the balance sheets present the correct state of affairs of the company.

37. Legal sanctions may have to be employed for securing due observance of the awards and decisions of the tribunals. If direction and control of an establishment becomes necessary for this purpose they may be exercised under special legislation to be undertaken for the regulation of industries.

Stoppages

38. There is obvious justification for compulsory postponement of stoppages without notice of change and while collective bargaining, conciliation or arbitration is in progress. A strike or lock-out without due notice during the pendency of any proceedings or in violation of the terms of a settlement, agreement, award or order have of course to be banned and attended by suitable penalties and loss of privileges. An illegal change should be treated on the same footing.

B. Public Sector (Industrial and Commercial Employees in Public Undertakings)

39. In India, as elsewhere, more and more industrial undertakings are now being financed and managed by the State. The number of workers employed in such undertakings is sufficiently large and harmonious industrial relations therein are matters of vital importance to the success and efficient working of these undertakings.

40. Public undertakings differ in an important respect from private undertakings. The 'profit' motive and the exploitation of workers for private gain have no significance in the State-owned enterprises. The undertakings have no doubt to show the same, if not greater efficiency of working as private owned undertakings. They have also to show profits. But the nature of these profits is different. The profits which these undertakings make are not profits intended for any individual or group of individuals but are extra wealth for the whole country.

41. A worker in a public undertaking stands on a different footing from a worker in private undertakings. He has a duel role of master and servant; master as a citizen of the country and servant as a worker of the undertaking. It is therefore necessary that he should be made conscious that in serving the undertaking he is serving himself and that the better he works and the greater his efficiency the better he will serve and help himself. He must be made to feel that the responsibility for the success or failure is as much his as that of the management and that the undertaking belongs to the country as a whole including himself. He should take pride in his contribution to the success of the undertaking.

42. The workers' enthusiasm for the success of public undertakings can be aroused only when they know that justice and fairplay prevail in the undertakings and proper arrangements are made for redress of the grievances of the workers. The aim should be to have a co-operative and contented labour force. The ways by which this can be achieved while maintaining peace in the undertakings and increasing production are :

(*a*) Wages in public undertakings should not be less favourable than those prevailing in the neighbouring private enterprises. In so far as working conditions and welfare amenities are concerned, undertakings in the public sector should set the pace and serve as models.

(*b*) The Board of Directors of these undertakings should have on it a few persons who can understand labour problems, the labour point of view and who have sympathy with the aspirations of labour.

(*c*) The benefits of all labour laws which are applicable to similar private undertakings should also be made available to the workers of these undertakings. Exemption from such labour legislation should as a rule not be granted but in case where the existing benefits are as good as or more favourable than those provided by such legislation, grant of exemptions may be considered.

(*d*) There should be progressive participation of labour in many matters of the undertaking. Works committees for the different departments and for the undertaking as a whole should be set up. The committees should be used for consultation and suggestions. The atmosphere should be such that the workers should be made to feel that in practice, as well as in theory, they are partners in the undertaking.

(*e*) Effective consideration of staff interests demand organized representation. A labour movement devoted to the protection and advancement of employee needs is as indispensable in public as in private undertakings. It is therefore essential to encourage the growth of healthy trade unions in these undertakings. There should not be any restrictions on industrial and commercial employees of Government undertakings exercising their trade union rights like any other employees.

(*f*) Collective bargaining between workers and management should be encouraged. Such collective bargaining should embrace both economic and non-economic demands. The management on the spot should be given full discretion and power to enter into commitments within certain prescribed financial limits. Government conciliation and arbitration machinery should be made available to the workers of these undertakings. The existing right of Government to accept, reject or modify an award should be restricted to periods of emergency.

(*g*) It is desirable that agreements between the management and the representatives of workers should make provisions for measures for increasing output and reducing costs, combating absenteeism and checking offences against discipline.

C. Role of Trade Unions and Employers' Associations in a Planned Economy

43. The trade unions and the employers' associations can play a positive and important role in the execution of plans as experience of other countries has shown. For the successful implementation of the plans in India, co-operation from trade unions and employers is absolutely essential. The important central organizations of workers and the employers' associations should be persuaded to treat the period of the execution of the Plan as a period of national emergency. Their close co-operation should be secured at different stages of the execution of the Plan. Some beginning has been made in the direction of such co-operation. The passing of the Industrial Truce Resolution in December 1947, whereby both the employers and workers agreed to refrain from the use of lock-outs, strikes and slow-down tactics, the establishment in 1948 of industrial committees for important industries on a tripartite basis, the setting up of works committees under the Industrial Disputes Act, the co-opting of labour representatives on the Development Committee where labour matters are discussed, the constitution of the Joint Consultative Board on a bipartite basis and the recent establishment of the Central Industries Advisory Council on which employers and workers are represented along with other interests, are some of the instances of such co-operation. All these are steps in the right direction. The scope of such co-operation should be widened and the representatives of employers and trade unions should be associated at every step in the implementation of the Plan.

44. Co-operation from unions and employers can assume several forms, some of which have been mentioned below :—

The All-India Organizations of Workers and of Employers can play an effective part by undertaking the task of presenting the plans to the affiliated unions and employers and discussing them with their members. They should convey their views to the planning authority and

to Government. The aim should be to create enthusiasm amongst workers and employers for the Plan. The unions and the employers could thus contribute much to the achievement and overstepping of the targets of the Plan. Healthy emulation should be promoted among the workers for this purpose.

The need for maintaining peace in industry and for avoiding interruption of work during the period of implementation of the Plan is obvious. In the interest of national economy unions and employers should exercise the utmost restraint in this respect.

The outlook of unions with regard to the question of wages should be attuned to the requirements of economic development, in keeping with considerations of social justice. It may otherwise happen that the increases are won by workers in those industries in which they are highly organised, while those which have a weak or no organisation would be neglected. It would not be appropriate to ask for flat percentage increases to maintain the relative advantage of those placed in higher categories.

The trade unions have to assume increased responsibility for the success of the productive effort. The whole economic health of the country depends upon rapidly increasing the productivity of labour. Such increases will largely depend on improved conditions of work and improved method and machinery. It will also greatly depend upon the utmost participation by the mass of workers in speeding up and improving production and that improvement can best be effected through modern industrial trade union organisations. All this would depend upon the extent to which employers associate workers with the productive effort and make the workers feel that in increased production lies the good both of the employers and workers. The employers should consult workers in respect of new machinery, methods of production and the way in which economies could be effected in the costs of production.

An important welfare activity to which the trade unions in foreign countries have devoted themselves to is the organisation of co-operative societies. The activities of most of the trade unions in India have been confined so far to getting the grievances of workers redressed and fighting for the rights of the workers. This might have been inevitable in the earlier stages of the development of trade unions in this country. Trade unions should now devote more time to welfare and cultural activities especially the organisation and running of consumers' and credit societies. This will be an important activity for the benefit of the workers. The employers could help such activity by providing facilities such as, accommodation, clerical help, loans to start such societies etc.

Trade unions and employers' representatives should be associated at the various evels—at the level of the undertaking, at the level of industry and at the regional and national level. The workers should feel that they are playing an effective part in the implementation of the Plan and that on them depends the rise in their standard of living as well as that of the common man.

II. Wages and Social Security

45. The worker today is not satisfied with merely the wage he receives. He expects o be protected against various types of natural and other risks arising out of employment. In addition to the principles of wage policy it is proposed to deal here with social security-and provision for the future of workers. This section has, therefore, been sub-divided into: (A) Wages and (B) Social security.

A. Wages

46. During the war and the post war period there had been a rapid rise in prices. The profits of industries have considerably increased. The organised section of labour has also been able to obtain substantial increases in wages. But if the inflationary pressure is to be checked, steps may be necessary to divert to saving the present expenditure on consumption and to increase production. With regard to the industrial sector, profits and wages may have to be subjected to some control by Government during the period of the implementation of the Plan. Action should therefore be taken on the following lines :—

(*a*) The excess profits tax and certain restrictions on dividends during the war and for a short period after the war have helped to keep in check the distribution of large dividends. During the period of the implementation of the Plan also similar restrictions should be placed on the remuneration of management, distribution of profits and the issue of bonus shares. Such restrictions may have to give due consideration to :

(*i*) a fair return on capital depending upon the nature of the business and the past practice of paying dividends during normal periods ;

(*ii*) the claim of share-holders for a fair return on capital where during the initial period of the new undertaking no distributable profits are made.

(*b*) On the side of wages, any upward movement, at this juncture, will further jeopardise the economic stability of the country if it is reflected in costs of production and consequently raises the price of the product. For workers too, such gains will prove illusory because in all likelihood they will soon be cancelled by a rise in the general price level, and in the long run the volume of employment may be adversely affected. Such an increase in wages should, therefore, be avoided. Workers can be expected to agree to such a course only if restrictions are also placed on the distribution of profits as outlined in (*a*) above. Any steps to restrict wage increases should, therefore, be preceded by similar restrictions on the distribution of profits. Subject to this wage increases should be granted under the following circumstances :—

(*i*) To remove anomalies or where the existing rates are abnormally low ;

(*ii*) To restore the pre-war real wage, as a first step towards the living wage, through increased productivity resulting from rationalisation and the renewal or modernisation of plant.

47. Certain broad principles which may help in the regulation of wages have emerged as a result of the labours of various Commissions and Committees appointed by the Central and State Governments. These have, for the most part, been embodied in the existing and

proposed legislation on the subject. They still do not form an adequate practical basis for a uniform policy in determining wage rates and effecting wage adjustments. The tripartite machinery, visualised in the section on Industrial Relations, should evolve in as precise terms as practicable, the 'norms' and standards, which should guide wage boards or tribunals in settling questions relating to wages, having regard to the claims of the various groups of workers *inter se*, of the other participants in industry and of the community as a whole. The course of action in this respect in the immediate future should be governed by the following considerations :—

(*a*) All wage adjustments should conform to the broad principles of social policy and disparities of income have to be reduced to the utmost extent. The worker must obtain his due share in the national income.

(*b*) The claims of labour should be dealt with liberally in proportion to the distance which the wages of different categories of workers have to cover before attaining the living wage standard.

(*c*) The process of standardization of wages should be accelerated and extended to as large a field as possible. There should be a progressive narrowing down of disparities in the rates of remuneration of different classes of workers in the same unit, of workers engaged in similar occupations in different units of the same industry, of comparable occupations in different industries and in wages in the same industry at different centres. Differentials for various jobs should be maintained at the minimum levels justified by :

(*i*) the degree of skill required ;

(*ii*) the strain and the fatigue involved ;

(*iii*) the training and experience required ;

(*iv*) the responsibility to be undertaken ;

(*v*) the mental and physical requirements for doing the work ;

(*vi*) the disagreeableness of the task ; and

(*vii*) the attendant hazards.

(*d*) A scientific assessment of the relative work-load in different occupations and industries should be taken up. In this connection pilot studies on payment by results which are proposed to be sponsored by the Ministry of Labour with the technical assistance from the I.L.O. are a step in the right direction.

(*e*) The payment of dearness allowance to compensate for the rise in the cost of living has been an important feature of the wage structure during the war and post-war period. Since the end of the war, there have been demands made on behalf of labour for merging a substantial portion of dearness allowance into basic wages as there was no likelihood of prices falling to the pre-war level. The Government of India recently appointed a Committee to recommend what percentage of dearness allowance given to Central Government servants should be treated as pay. The Committee, in its report submitted to Government, has come to the conclusion that in the foreseeable future the cost of living index is not likely to fall below the range 265-284, taking the pre-war index to be 100. On this basis, the Committee recommends that 50

per cent of the dearness-allowance admissible to the Central Government servants drawing a basic pay upto Rs. 750 p.m. should be amalgamated with pay. We accept this recommendation and suggest that the recommendation made by the Committee should be extended to workers in the private sector also.

48. Full and effective implementation of the minimum wage legislation should be secured during this period. Depressed areas should receive prior attention. In view of the paucity of data and the administrative difficulties pointed out by various State Governments, a limited beginning should be made with regard to the fixation of minimum wages for agricultural workers and the scope should be extended further as experience is gained. Suggestions on this subject have been made earlier in the report.

49. A kind of profit sharing in the form of periodic bonuses usually awarded by industrial courts and tribunals exists today. No proper basis for the awards has been worked out. The subject is one requiring expert examination and a study of the general and technical aspects of the problem. Efforts should be made to find out suitable experts within the the country as also from countries like the U.S.A., Germany, the United Kingdom, Sweden, and organisations like the I.L.O. who should go into the question of wages, profits, terms and conditions of payment, etc., and make recommendations. Although the quantum of bonus to be paid would be determined by the formulae to be laid down, to prevent the diversion of resources into consumption payment in cash should be restricted, the balance to constitute the savings of workers. This course of action should be accepted on the basis that it does not prejudice the contentions of either party regarding the character of the bonus. This would of course have to accompany similar restrictions on consumption in respect of other sections of the community.

50. Permanent wage boards with a tripartite composition should be set up in each State and at the Centre to deal comprehensively with all aspects of the question of wages, to initiate necessary enquiries, collect data, review the situation from time to time and take decisions regarding wage adjustments *suo motu* or on reference from parties or from the Government.

B. Social Security

51. Article 32 of the Constitution says, "The State shall, within the limits of its economic capacity and development, make effective provision for securing the right to work, to education, and public assistance in case of unemployment, old age, sickness, disablement and other cases of undeserved want." While this is generally applicable to the population of the country as a whole, the industrial worker is more liable to disease and invalidity than the average citizen. The man-days lost on account of sickness and disability constitute a heavy drain not only on the slender resources of the industrial workers but also on the industrial output of the country. Lack of social security impedes increased production, leads to larger labour turn-over and prevents building up of a stable and efficient labour force.

52. In all advanced countries the worker is protected against various types of risks such as, sickness, unemployment, old age, employment injury, maternity, invalidity, etc. In India also, some of the risks to which a worker is exposed have been covered by the Workmens' Compensation Act and the Maternity Benefit Acts of the various State Governments. The Employees

State Insurance Act is a more comprehensive piece of legislation and it applies in the first instance to factories using power and employing 20 or more persons, and covers all employees who are in receipt of remuneration not exceeding Rs. 400 p.m. It insures risks of sickness, maternity, and employment injury. In addition to the medical care to which an insured person is entitled, cash payments are given equal to about half of the average wages.

53. The scheme framed under the Employees' State Insurance Act has been introduced at present in Delhi and Kanpur and is expected to be implemented throughout the country by the middle of July 1954. The programme for the implementation of the scheme in other States prepared by the Labour Ministry should be adhered to and the State Governments, employers and workers should offer their fullest co-operation for the purpose. The scheme does not include at present the families of the insured persons. Both in its coverage and the amount of benefits provided the scheme may appear to be modest as compared with similar schemes in some of the advanced countries. In view of its novelty, administrative and other difficulties and the financial implications of the scheme, efforts should be directed during the period of the Plan only to the proper implementation of the scheme in its present form and to putting it on a sound and sure foundation.

54. Another measure which can provide for the future of the workers is the institution of provident funds. The Central Legislature has recently passed the Employees' Provident Fund Act, 1952. A scheme under that Act has also been published and its implementation is expected to take place shortly.

55. The Act at present applies to six major industries employing 50 or more persons—Textiles, Iron and Steel, Cement, Engineering, Paper and Cigarettes. As soon as experience is gained and the scheme is placed on a sound basis, it should be extended in gradual stages to all the industries employing 50 or more persons during the period of the Plan. A programme for its extension should be drawn up.

III. Working Conditions

56. In order to get the best out of a worker in the matter of production, working conditions require to be improved to a large extent. The Factories Act, 1948, the Indian Mines Act, the Plantation Labour Act, 1951, and the proposed Central legislation for regulating the conditions of work in shops, establishments and motor transport services, have this common object and are sufficient for the purpose. The emphasis in the next five years should, therefore, be on the administrative measures needed for the implementation of such legislation. So far as the workers employed in factories and plantations are concerned, action may be taken on the following lines :—

A. Factories

57. The Factories Act, 1948, is a comprehensive measure, and should, to a great extent, help to improve working conditions inside factories. This will be possible only if the provisions in the Act are properly enforced. The Act contains detailed provisions for ensuring the

safety, health and welfare of workers employed in factories. The provisions relating to medical supervision and occupational health, which had not hitherto received proper attention, have been strengthened, and notification of occupational disease has been made compulsory in order to focus attention on these aspects of the problem. Apart from these, the various provisions relating to welfare should contribute to the general well-being and conten ment of the workers. The effective implementation of the Act is, therefore, a matter of the utmost importance in efforts to improve working conditions and promote the general well-being of the worker, and for this purpose the following recommendations are made :—

(*i*) Satisfactory standards have not yet been achieved in respect of enforcement in many areas. Factory inspection services need to be strengthened for this purpose and should be so reorganised as to include not only persons representing various branches of engineering but also men drawn from other technical professions, including the medical profession.

(*ii*) Considering the large number of factories and the vast areas over which they are spread, priorities should be fixed, to ensure better attention to areas and industries in which substandard conditions still prevail and to secure strict compliance with the provisions of the law.

(*iii*) In the enforcement of the various provisions of the Factories Act, particular emphasis should be placed on the social aspects of the legislation.

(*iv*) In organised industries tripartite agreements should be drawn up on the standard of compliance with the provisions of the Factories Act. Effective machinery should be set up to review the working of the agreements in each group of industries. The working of the agreement would in itself constitute a form of inspection within industry and to the Inspectorate it would indicate the basic requirements from which they might work up for further improvement in working conditions in the industry.

(*v*) For the proper implementation of the various provisions of the Factories Act and also for providing a centre of information for inspectors, employers, workers, and others concerned with the well-being of industrial labour and to stimulate interest in the application of principles of industrial safety, health and welfare, a National Museum of Industrial Health, Safety and Welfare should be established at an early date in a centrally-situated industrial area. The Museum, as a centre of demonstration with exhibits covering all aspects of working conditions, including health, and with its information section and library, could be the nucleus round which any specialised scheme of training and education in labour problems could be evolved.

(*vi*) For the effective implementation of the provisions relating to medical supervision and occupational health, the appointment of full-time medical inspectors on the staff of the Factory Inspectorates should be expedited.

(*vii*) Short courses of instruction in industrial health for those who are working as part-time doctors and for those who are working as medical inspectors should be provided by Government.

(*viii*) Collection of objective information on occupational diseases and other health problems and teams for carrying out surveys and investigations should be organised as part of the activities of the Factory Inspection Services. The purpose of these investigations should be to assess and evaluate the potential hazards in industrial processes.

(*ix*) Research and investigations carried out by research institutions of trade associations are usually confined to technical advance in industry, such as new machinary and new processes. Such institutions should be encouraged to extend their activities so as to cover a wider field, such as industrial psychology, and investigations of human problems which are of equal importance for the progress of industry in general.

(*x*) The Public Health Departments of some of the States, which have Industrial Hygiene Divisions, should maintain the closest liaison with the Factory Inspectorates.

(*xi*) Employers, Trade Unions and Governments should co-operate in educating the workers, so as to ensure their active participation in all measures taken for their well-being.

(*xii*) The fees recovered for licensing and registration of factories should be utilised primarily for strengthening the Factory Inspectorates.

B. PLANTATIONS

58. Plantations can be considered to be the largest single labour absorbing industry in the country. Conditions in the plantations remained unsatisfactory for a long time for a variety of reasons. This led to a number of studies undertaken by government agencies to assess the problems of plantation workers. As a result of these studies, steps have been taken from time to time to ameliorate the conditions of work of these workers. The most recent and far-reaching piece of legislation, modelled on the lines of the Factories Act, is the Plantation Labour Act, 1951. There are, however, certain other matters on which action is called for and the lines on which such action is necessary are indicated below :—

(*i*) The activities of the Controller of Emigrant Labour should be co-ordinated with the proposed organisation to be set up for the supervision of the administration of the Plantation Labour Act.

(*ii*) To avoid duplication of recruiting staff for plantations, the possibilities of effecting co-ordination in the agencies of recruitment (*i.e.*, Employers' Tea District Labour Association and the State Agencies of Employment Exchanges) should be investigated.

(*iii*) In pursuance of decisions taken by the Industrial Committee on Plantations and in consultation with the State Governments concerned, the Ministry of Labour has recommended certain steps for checking the evils of the Kangani system of labour recruitment in South India. This system should be abolished as soon as possible.

(*iv*) To supplement the earnings of plantation workers, cottage industries for the manufacture of implements required for plantations should be established. A portion of the grant given by the Central Tea Board can be utilized for the purpose. If necessary the Tea Board should be persuaded to increase this grant. Care should however be taken to see that the cottage industries do not interfere with the normal working of the plantations.

(*v*) The application of the Provident Fund Act to plantations should be examined in the light of the experience gained by the working of that Act in other fields.

(*vi*) There is a considerable leeway to be made up in the provision of housing to workers. Employers should be persuaded to provide houses as agreed to in the tripartite conference and the Government should extend to them the necessary help in procuring building materials etc

(*vii*) Minimum qualifications for doctors serving on tea estates of a certain size should be prescribed under the Central Rules to the Plantation Act.

(*viii*) The experimental Research Station at Toklai should be strengthened for undertaking studies in the human relations aspect of the industry.

(*ix*) The priorities as to welfare work on plantations expected of the employers should be decided on a regional basis. For example, assuming that education, health and housing of workers are the main items of welfare, in cases where plantation housing comes up to the standard of housing in adjoining areas, the planters should be asked to provide education and health facilities. In cases where adequate health provisions are there, the emphasis should be on the other two.

(*x*) In the case of small plantations welfare facilities should be the responsibility of a group of such plantations.

IV. Employment and Training

59. Effective utilization of man-power, having regard to the requirements of both industry and workers, is a question of national importance. Production depends upon a steady flow of labour of requisite skill in required quantities. This entails the collection and dissemination of information regarding man-power resources, organization of an efficient employment service, correct appraisal of the different types of skill required and the provision of facilities for training of workers both to increase their efficiency and to make up deficiency in particular branches of technical personnel. Progress has been made in recent years in some of these directions. The main steps which should be taken to bring about an improvement in the present methods of recruitment, employment and training of personnel are :

(*a*) More attention should be given to the improvement of the internal recruiting arrangements made by individual concerns so as to eliminate completely exploitation of workers. In this regard, the possibility of extending the schemes of decasualization of dock workers and of textile workers in some of the States to other industries and centres should be investigated.

(*b*) The employment exchange organisation set up by the Government has been rendering useful but very limited service. An enquiry should urgently be made to examine what changes in character, methods and organisation of the service would help to put the system on a sound footing.*

(*c*) Although the correct assessment of long-term and short-term requirements of different types of skilled man-power both in its technical quantity and quality is important from the point of view of the expanding industries and of several development projects included in the Plan, very little work has been done by way of conducting man-power surveys in the country. A beginning should be made by undertaking a pilot study where major schemes are likely to be undertaken. The Director-General of Resettlement and Employment should select suitable regions for such study and conduct an informative and statistical survey assessing the labour requirements and employment opportunities.

* Since the making of this recommendation, an Enquiry Committee has been set up to examine all aspects of the Resettlement and Employment Organisation and offer recommendations regarding its future.

(*d*) The value of provision of technical and vocational training has been gaining recognition only recently. Facilities provided through the technical and industrial schools, the training centres of the Ministry of Labour and the apprenticeship and training arrangements in industrial undertakings have remained by and large un-co-ordinated. The All-India Survey which is being conducted by the Director-General, Resettlement and Employment, should help to bring about the necessary co-ordination. Proper tests and standards should also be laid down. In any such training scheme the problem of the unemployed worker should receive special consideration. This will chiefly be in the form of adequate provision of retraining facilities with due regard to the prospects of future employment and the establishment of vocational guidance and employment counsel services.

60. Another difficulty in the way of increase in production and reduction in costs is that several industries are faced with labour surplus to their requirements. The problem of rationalisation has so far proved difficult of solution. Notwithstanding the imperative need to reduce costs by rationalising industrial processes, the working class has strongly resisted it because of the consequent displacement of labour. It is now possible to reconcile the conflict and facilitate the progress of rationalisation on the strength of the following safeguards :—

(*i*) Musters should be standardised, and work-loads fixed on the basis of technical investigations carried out by experts selected by the management and labour. Side by side working conditions should also be standardised. In the case of new machinery, a period of trial may be necessary before standardisation is effected ;

(*ii*) Wherever rationalisation is contemplated, fresh recruitment should be stopped and vacancies due to death and retirement should not be refilled ;

(*iii*) Surplus workers should be offered work in other departments wherever possible without causing a break in service and without bringing down their emoluments as far as possible ;

(*iv*) Having regard to the position regarding raw materials, the state of the capital market, the availability of capital goods and the demand for the products of an industry, wherever the conditions of the industry permit, new machinery should be installed ;

(*v*) Gratuities should be offered as inducement to workers to retire voluntarily ;

(*vi*) Retrenchment should be effected from amongst persons who have been freshly employed ;

(*vii*) Where management and labour agree, the possibility of working for seven days in a week may be explored as a temporary measure ;

(*viii*) Workers thrown out of employment as a result of rationalisation should be offered facilities for retraining for alternative occupations. The period of such training may extend upto nine months. A training scheme should be jointly worked out by Government, employers and workers ;

(*ix*) The maintenance of workers during the training period should be the responsibility of the management, whereas the cost of training should be borne by the Govern ment ;

(x) Full use should be made of the possibilities of utilizing surplus labour in various projects undertaken by Government ;

(xi) Incentives for sharing the gains of rationalisation through higher wages and a better standard of living should be provided. Where such gains are made through the additional efforts of workers, they should receive a share in the resulting benefi-, most of which should pass to workers where wages are below the living wage. Where there has been some capital investment by the management, this should be taken into account in distributing the workers' share. The object is to facilitate the workers attaining a living wage standard through acceptance of rationalisation.

V. Productivity

61. Considerable attention has been focussed on the productivity of labour in recent years both in this country and abroad. Employers in India have complained that productivity per worker has been going down. Workers contest this allegation with equal vehemence. It is, therefore, necessary that scientific investigations regarding these claims should be undertaken. Such investigations pre-suppose the existence of trained personnel, reliable industrial and labour statistics and a scientific attitude on the part of organisations of employers and workers.. None of these conditions exists in the country today and much preparatory work is needed. The first step is to evolve methods for carrying out productivity studies under Indian conditions before the share of the different factors in the causation of high or low levels of productivity can be allocated on the basis of such studies. It is therefore suggested that a team of productivity experts should be invited under the Technical Assistance Programme and that this team should be charged with the responsibility of training a sufficient number of officers from Government, industry and trade unions in developing methods of productivity. As a result of discussions between the Labour Ministry and the Planning Commission, and on a reques made by the Labour Ministry, the I.L.O. has formulated proposals for technical assistance in the field of systems of payment by results and productivity. The experts to be sent out by the I.L.O. would undertake studies in the textile and engineering industries. After making a preliminary selection of the undertakings in which the studies are to be carried out, the experts would undertake a thorough analysis of the existing organisation and methods of work, job classification and wage scale with a view to suggesting improvements designed to increase efficiency and productivity and to improve working conditions. Indian experts from Government, employers and trade unions would be associated in this work. A limited number of persons from establishments would also be trained by the experts.

62. Closely allied with this subject is the training-within-industry programme. These T.W.I. methods enable supervisors to play a vital part in the operation of the industry. The scheme is intended to improve supervisory skill by three separate programmes ; Job Instruction, to develop skill in instructing workers in their particular operations ; Job Relations, to develop skill in the management of personnel , and Job Methods, to develop skill in improving

working technique. The Ahmedabad Textile Industry's Research Association with the assistance of the I.L.O.'s Asian Field office on Technical Training, has carried out some valuable experiments in one of the textile mills of Ahmedabad. The supervisors and the heads of the departments were trained in the technique of " Job Instruction " by the I.L.O. experts on training-within-industry. The results of the experiments have shown an increase in production from 7 per cent to 18 per cent in different sections of the Spinning Department and 11 per cent to 30 per cent in different sections of the Weaving Department.

63. Much of this valuable work will be lost after the departure of the experts unless permanent arrangements are made to carry it on afterwards. This should be part of the function of the Labour Ministry. Future action should be on the following lines :

(*a*) Experts on training-within-industry should be invited under the Technical Assistance Programme to impart training in these methods.

(*b*) A sufficient number of officers from the Labour Ministry, employers' organisations and trade unions should be trained in the methods of productivity, payment by results, and training-within-industry. They will be mainly responsible for imparting training to a sufficient number of persons in different industries. Productivity and training-within-industry schools should be organized.

(*c*) An Advisory Committee consisting of representatives of employers' organisations and trade unions should be set up to advise the Ministry on all matters pertaining to these subjects.

(*d*) The work should be carried out in close co-operation and with the help of institutes and firms of industrial consultants engaged in similar studies.

(*e*) Regular conferences of managers, technicians and trade union officers for discussion of all the aspects of these methods should be organised.

(*f*) Side by side with the studies in the textile and engineering industries, in consultation with experts such information as may be necessary should be collected concerning further industries to which the studies should be extended. On the basis of such information a regular programme of extension of productivity and training-within-industry methods for the next few years should be drawn up.

CHAPTER XXXV

HOUSING

INTRODUCTORY

1. The housing problem has become acute in most industrial regions of the world since the last war. There is increasing recognition everywhere of the close relation between housing and the health and well-being of the people. Actually, over a number of years, shortages on a large-scale have developed and conditions worsened a great deal. Efforts made to solve the problem were handicapped by the difficult economic situation prevailing during these years. Private enterprise has proved incapable of meeting the needs and the State has had to assume direct initiative and responsibility in this field to an increasing extent. In some highly industrialised countries, housing accommodation has been provided to a large extent by heavy subsidies from the State in respect of houses of standard design for low-income groups which are not an economic proposition in most countries at present on account of the high cost of construction, building materials and development.

CONDITIONS IN INDIA

2. In India the situation has become particularly serious on account of the large increase of population since 1921. The percentage increase of population in the last three censuses has been 11%, 14·3% and 13·4% respectively. During the same period the growth of population in urban areas is estimated at 21%, 32% and 54% respectively. The heavy shifts of population from the rural areas reflected in these figures have occurred on account of the lack of adequate opportunities for employment in the villages and the growth of industry and business in towns with the attraction of relatively high wages and various kinds of amenities. The second world war helped the growth of urban population by setting up a number of war production plants. The labour population engaged in them did not, as a rule, go back to the villages when these plants ceased to operate at the end of the war. The increasing unemployment and underemployment in agriculture have helped this tendency. Since 1947 when the country was partitioned there has been a very heavy influx of refugees who have, on the whole, tried to settle in the urban areas. The supply of houses on the other hand did not keep pace with the increasing demand. Private enterprise, which has been the primary source of building activity so far, tended to shrink on account of scarcity and high price of building materials during and immediately after the war. The enactment of legislations controlling rents and requisitioning premises had also a deterrent effect on private enterprise in building. Pressure on the existing accommodation, therefore, progressively increased leading to evils of over-crowding, deterioration of housing estates and a variety of malpractices in relations between landlords and tenants.

3. Most of the towns in India have grown up haphazardly. They have a large proportion of sub-standard houses and slums containing insanitary mud-huts of flimsy construction, poorly ventilated, over-congested and often lacking in essential amenities such as water and

light. This is specially so in the large industrial cities. The disgraceful sights presented by the *ahatas* of Kanpur and the *bustees* of Calcutta are conspicuous examples of this state of affairs. These conditions have developed because of insufficient control over building activity by the State or municipal authorities. Local authorities have been generally indifferent to enforcing such bye-laws regarding building and sanitation as have existed. Their own resources have been too meagre to permit any development work worth the name.

4. Rents have been generally high, but in pre-war years sharing of tenements by several people or even families in conditions of extreme over-crowding reduced the burden on the individual to some extent. But during and after the war, landlords, fully conscious of the scarcity value of accommodation, began to realise rents at much higher rates, sometimes wholly out of proportion to the capital outlay. Very often consideration money or premium, known as *pugree* or *salami*, was charged for letting out house property. The State Governments attempted to control rents and to prevent eviction of tenants by means of special legislations. While the tenants could be given some protection against eviction, the attempt to control rent, specially in the case of new comers, did not prove very successful, generally for the same reasons which led to the failure of price control of essential commodities. Requisitioning of house properties by Governments, both Central and State, during and after the war to acccommodate their offices as well as officers and, in some cases, for allotment to private citizens led to a further contraction of building activity of private landlords and thus aggravated the shortage.

Housing by Governments and Public Bodies

5. In India, the necessity of providing accommodation for their own employees specially in smaller towns or out of the way places has been long recognised by Governments, both Central and Provincial, and some housing activity of this description has been a regular feature throughout. Of late, it has also been realised that housing for low-income groups, who are not necessarily Government servants, will have to be undertaken, at least in the bigger cities, to cope with the acute shortage of accommodation. Among the State Governments, Bombay took a lead in 1921 by establishing a Development Department to reclaim land, to construct 50,000 one-roomed tenements and to organise the supply and distribution of building materials to cope with the growing shortage of houses in Bombay city. This Department had to be closed down soon after it had built only 15,000 tenements. The cost of construction proved very high and workers could not afford to pay the rent which was fixed by the Department to cover the interest and maintenance charges of these buildings. The Bombay Government resumed their activity in this field in 1949 by setting up a special Housing Board with the object of building houses for industrial workers and other low-income groups, developing land, and assisting in the production and distribution of building materials. The Board, which was set up by legislation, was given a loan of Rs. 4·37 crores upto March, 1952 to provide its initial capital. It has constructed 7,000 tenements for industrial workers and low-income groups and over 9,000 tenements for displaced persons out of an allotment of Rs. 2 crores by the Central Government. At present it is engaged in developing an area of about 400 acres of *khazan* land for co-operative housing

societies at a cost of about rupees one crore. Of late, the activities of the Board have been considerably curtailed because loans and subsidies expected from the Central Government have not materialised. Other State Governments have not so far taken very active steps in the sphere of housing. Some of them such as Uttar Pradesh, Madhya Pradesh and Hyderabad have set up Housing Boards quite recently. Others such as Bihar and Mysore are considering similar measures. None of these Boards appears to have started functioning yet except in Uttar Pradesh where construction of houses for workers of sugar factories has been taken up out of a special cess levied by the State Government.

6. Improvement trusts in Bombay, Calcutta, Madras and Kanpur have undertaken housing schemes to some extent. Very often these are rehousing schemes for persons displaced by the activities of these trusts in opening up and clearing residential localities. Municipalities have also constructed a certain number of houses, generally for their own essential staff but occasionally for other low-income groups as well. The total number of houses constructed by local authorities is reported to be 18,771. The main difficulty in the way of a more ambitious programme of construction has been the lack of funds. Most of the improvement trusts have no independent sources of revenue and have to depend on grants from State Governments or subventions from municipalities. As for municipal finance, it is generally in such a deplorable condition that few municipalities can provide even the minimum service to which the rate-payers are entitled, and can scarcely venture into such costly projects as housing schemes for low-income groups.

7. The activities of the Central Government till quite lately were confined to providing houses for their employees, particularly in essential services connected with communications and transport. The Indian railways have done pioneering work in this line and the total number of houses constructed by them up to the end of March, 1951, was 2,75,917 of which as many as 1,97,535 were meant for low-paid railway employees. The Railway Board have a further programme of construction of accommodation for their staff at a cost of about Rs. 3·7 crores in 1952-53 and about Rs. 4 crores a year for the rest of the period of the Five Year Plan. The Ministry of Defence also provide accommodation for their employees in various parts of the country. Up to 1949 the number of houses constructed for ordnance workers, for instance, was 22,340 the total labour employed in ordnance factories being only 52,864. The Posts and Telegraphs Department have also undetaken construction of houses for their staff. State industrial undertakings, such as the fertilizer factory at Sindri, the locomotive works at Chittaranjan and the aircraft factory at Bangalore have also constructed houses to accommodate their staff.

8. It is in connection with the construction of houses for refugees from Pakistan that the Central Government first undertook a larg-scale housing programme for persons other than their employees. A major situation was created when as a result of the partition of the country about 75 lakhs of displaced persons came to India from Pakistan and had to be provided with accommodation of some sort. The problem has been tackled to a great extent and well-planned colonies and town-ships in various parts of the country have been developed where not only reasonably comfortable accommodation but also local employment

in industry and trades has been provided. The total number of houses completed upto June, 1952, was 94,200 for displaced persons from Western Pakistan. Another 17,300 houses were under construction. In addition, individual displaced persons constructed 37,000 houses with financial assistance from Government. Among major colonies which have been set up are Ulhas Nagar near Bombay and Sardar Nagar near Ahmedabad ; Gobindpur and Hastnapur in Uttar Pradesh ; Chandigarh, Faridabad and Nilokheri in the Punjab. For the displaced persons from Eastern Pakistan, townships are under construction at Fulia and Habra in West Bengal and others in Assam and Bihar. Up to the end of June 1952, 7667 houses had been constructed by Government for the displaced persons from Eastern Pakistan. The total expenditure on housing for displaced persons incurred upto the end of March 1952, by the Central Government, was Rs. 48 crores. The efforts of Government to rehabilitate displaced persons are not yet over and additional funds are being allocated for the purpose. One outcome of this activity is the impetus for bold experiments in new materials and modes of construction with a view to effect utmost economy. Thus, the Punjab Government built nearly 4,000 houses in stabilised soil with cement plaster on both inner and outer wall. The Ministry of Rehabilitation experimented with the construction of traditional types of houses at Nilokheri, Faridabad and a number of other towns in the Punjab and West Bengal, by organizing the production of all building materials and components and labour under Government auspices, thereby eliminating the services of contractors. The cost of construction was considerably reduced as a result ; at Nilokheri it came to Rs. 4/8/- to 4/12/- per sq. ft. of the plinth area as against Rs. 7 per sq. ft. with standard materials and Rs. 6/- per sq. ft. with inferior specifications by the Central Public Works Department. In West Bengal also housing at Fulia showed the cost to be Rs. 4/13/- per sq. ft. of the plinth area.

Private Enterprise

9. In respect of provision of houses for their workers, the employers have not a uniform record. A number of them have appreciated the necessity of providing accommodation for their workers in and around the work-site in the interest of efficiency as well as for securing a steady supply of labour. During and immediately after the war, several large concerns which had made considerable profits during the period invested part of their earnings in providing better living conditions for their workers. Some of them were prevented from doing so because they could not obtain land at reasonable cost and municipal services could not be assured. On the whole, construction of houses by employers in post-war years has fallen short of expectation. Where accommodation has been provided it has not always been of sufficient size or of satisfactory quality. The employers have generally taken the stand that not they but the State has the responsibility forproviding houses for the working class and that apart from their other handicaps, they have not sufficient means for investing in house building. A few instances of the efforts made by the employers to solve the housing problem of labour may be referred to here. In November, 1950, the Industrial Committee on Plantations decided to adopt two-room standard for all housing in plantations in Northern India and called upon planters to put up houses for 8% of their labour every year. About 25,000 houses were built in 1950-51 in accordance with this scheme which is still in progress, the From Coal Mines Welfare Fund construction of standard types of houses for

miners in a big colony at Bhuli near Dhanbad was undertaken and in 1948-49, 1566 two-room tenements were constructed at a cost of about Rs. 54 lakhs. These tenements were let out at a concessional rate of Rs. 8 per month, of which the worker paid only Rs. 2, the balance being met by the mine-owners. The jute industry appears to have put up the largest number of houses for its workers. Statistics of houses constructed by different industries are not available but, some time ago, a total of 4,28,970 workers were reported to have been provided with accommodation by employers.

10. Co-operative housing societies have attempted, to a limited extent, to provide accommodation for middle and low-income groups. The Madras and Bombay States have been the centres of co-operative activity in this direction. In Madras about 4,000 houses were constructed upto August, 1950, by 273 co-operative building societies. About 12,000 houses were also under construction. In Bombay 3,500 houses were constructed in 1948 and 229 houses were under construction by 315 societies. In Uttar Pradesh 136 societies were registered by 1949 and were provided with facilities by way of sites and loans at low rates. The Textile Labour Association at Ahmedabad constructed 200 tenements and organised workers into co-operative housing societies for providing suitable accommodation for them on hire purchase system. Originally 8 such societies were formed to which 8 more were added after the last war. The major difficulty which faced the Association was paucity of funds and the inability of the Bombay Government to provide substantial assistance. Similar difficulty about obtaining loans at low rates has been experienced by co-operative building societies in other States as well.

11. The bulk of the building activity throughout has been in the hands of private enterprise. But for a long time it has not been able to keep up with demand. The trade depression of 1931 dealt a severe blow to the building industry; the level of construction fell between 1931 and 1939. During the war years and immediately thereafter both manpower and materials became scarce and the situation was further aggravated by a phenomenal growth of the urban population. A great defect in private construction, particularly for the low-income groups, is that too often only the barest amenities and services are provided and sometimes, as in the slum areas, even such minimum amenities are altogether absent. The lack of vigorous enforcement of building regulations by municipal authorities has been a potent source of evil and private builders have generally put up houses with little regard for sanitation and comforts of tenants.

Estimate of Housing Shortage

12. Reliable statistics of the number of houses in urban areas are not available. While construction of houses remained almost at a standstill for several years on account of the war and post-war difficulties, urban population grew steadily. The advance census figures of 1951 show that in the decade 1941-51, while the rural population increased by 7·4% the urban population increased by 53·77%. The corresponding figures of the previous decade were 12% and 32·1% respectively. The Planning Commission made an attempt to obtain a rough estimate of housing shortage in the principal industrial towns. Information received in respect of 37 such towns with a total population of 17,14,560 engaged in large-scale

industries shows that the approximate number of industrial workers, who are in immediate need of accommodation, is 4,54,900. The Environmental Hygiene Committee estimated the shortage as 18·4 lakh houses in urban areas in addition to 10 lakh houses for displaced persons from Pakistan. According to the advance census figures of 1951, the population of 74 cities with one lakh or more inhabitants increased in the decade ending in 1951 by about 74 lakhs. Population of towns with 5,000 to one lakh inhabitants increased by 140 lakhs. It will thus be seen that to house this increased population considerable building activity will have to be undertaken

Housing Policy

13. The subject of housing is not specifically mentioned in the seventh schedule of the Constitution of India which deals with matters coming within the purview of the Union and State Legislatures. In so far as housing for industrial labour is concerned, item 24 of list III may be said to cover it because it deals comprehensively with welfare of labour. That would bring the matter in the Concurrent List with which both the Union and the State Governments are concerned. The residuary power in relation to subjects not mentioned in the Concurrent List or the State List, however, vests in the Union Legislature. As such the Centre may be said to be directly concerned with the subject of housing in general. In these times, the State cannot afford to confine its role in this field to planning and regulation. Private enterprise is not in a position to do the job so far as low-income groups are concerned. They cannot afford to pay the economic rent for housing accommodation of even the minimum standards. The State has, therefore, to fill the gap and assist the construction of suitable houses for low and middle income groups both in urban and rural areas as a part of its own functions. This would involve a large measure of assistance which may take the form of subsidies on a generous scale and the supply of loans on a somewhat low rate of interest. In view of the gravity and vastness of the problem and the financial condition of the States, the Central Government have to accept a large measure of responsibility for financing housing programmes in the industrial centres where congestion and shortage have become very acute in recent years. Provision should also be made to find funds for middle-class housing schemes, preferably through co-operative building societies. We would, however, suggest that the State Governments, who are being relieved to a large extent of the responsibility for industrial housing, should concentrate on ameliorating conditions of housing in rural areas. Although a great deal cannot be expected in view of the financial limitations, a beginning can be made in taking up pilot schemes of model housing and better living conditions in selected rural areas.

14. The principle of interest-free loan and subsidy for housing schemes are not novel ideas as far as the Central Government are concerned. The Industrial Housing Scheme, which was formulated in 1949, envisaged the issue of interest free loans by the Central Government to the State Governments or private employers sponsored by the latter to the extent of two-thirds of the cost of an approved housing scheme, on condition that the rent charged would not exceed 2½% of the capital cost subject to a maximum of 10% of the workers' wages, the employer contributing 3% of the cost of the houses. Early in 1952

a new policy was announced whereby the Central Government were prepared to pay a subsidy upto 20% of the cost of construction, including the cost of land, provided the balance was met by the employers who would also let out the houses to genuine workers at rates suggested under the earlier scheme. The houses thus constructed would remain the property of the employers.

15. That these concessions have not produced the desired effect seems to indicate that the policy of paying subsidies, which has already been accepted, will have to be further liberalised as well as supplemented by loans. We recommend that subsidy should be paid to the State Governments upto 50% of the total cost of construction including the cost of land. The State Governments in their turn will allocate the grant to the statutory housing boards. The subsidy admissible to private employers of labour and co-operative societies of industrial workers under this scheme should be limited to 25% of the total cost of construction including the cost of land. In addition to the subsidies, loans should be made available to the State Governments for the balance of the cost at a rate of interest which should only take into account the cost of servicing the loans above the current rate of the Central Government borrowing. Such loans should be repayable in 25 years. The State Governments in their turn are expected to make funds available to statutory housing boards out of the Central loan. Loans should also be admissible to co-operative housing societies of industrial workers and to private employers up to 37½% of the actual cost of construction including the cost of land. Interest should be charged at a reasonable rate having regard to the rate at which similar loans are advanced to the State Governments. The period of repayment in these cases should, however, be 15 years. In regard to the co-operative societies, we would further suggest that as far as possible, the subsidy should take the form of grant of developed lands of equivalent value. It will also be necessary in these cases to provide sufficient safeguards in regard to transfer of shares of the members so that by a change in the composition of the society the houses do not come into the possession of a class for whom they are not intended. We further suggest that where co-operative building societies of industrial workers are not in existence, developed building sites may be made available to individual workers who are willing to construct houses of their own under this scheme on the same terms as are admissible to industrial co-operatives.

16. At the same time we think that provision should be made for loans to co-operative building societies of middle class and other low-income groups who are also in need of financial accommodation no less than industrial workers, though they may not be considered eligible for the payment of subsidy. In their case we think it would be sufficient if loans are made available at reasonable rates of interest. For this purpose we recommend that the Central Government should provide funds for issue of loans to co-operative building societies through the State Governments, who will make the money available to such societies through the State co-operative organisations. The important point is that the difference between the rate of interest at which such loans are made available by the Central Government and the rate at which the co-operative societies are asked to pay should not be more than half per cent in order that the scheme is of substantial assistance to such societies. We lay special emphasis on co-operative housing societies not only because they can mobilise private capital, which otherwise would remain dormant, but because they open the way for aided self-help in the construction of houses which should be encouraged for reducing the cost as much as possible.

17. We recognise, however, that for years to come the bulk of the building activity will still have to be undertaken by private enterprise. In building works on a small scale the private builder can often construct at a rate cheaper than public bodies on account of economy in supervision and personal attention to details. We think that the encouragement to private builders should take the following forms :—

(*a*) provision of suitable building sites, where possible, at reasonable cost ;

(*b*) empowering the statutory housing boards to guarantee loans which a private builder may obtain from a bank or an insurance company to finance construction of buildings, the buildings in such cases being hypothecated to the housing boards,

(*c*) reorganising the present system of distribution of essential building materials, such as steel, cement, coal, etc., and taking steps to reduce the high prices of these materials which are all subject to price control, and for this purpose conducting necessary investigation ; and

(*d*) provision on the lines of section 39 of the Delhi and Ajmer Rent Control Act XXVIII of 1952, which exempts premises constructed between certain periods from the operation of the rent fixation law.

At the same time we would suggest that while private builders should be encouraged to the maximum, steps should be taken to eliminate the speculative element in land and to discourage land hoarding in urban areas, for which purpose the taxation structure on vacant lands should be so designed as to make all land hoarding unprofitable. We understand that steps in this direction have been taken in certain States.

18. Building cost can be substantially reduced by adopting improved techniques which have already been tried in other countries. For instance, production of bricks can be mechanised, at least in the bigger cities, by use of power and improved types of continuous process kilns. Similarly building components such as door and window frames and other building equipment can be standardised, thus making mass production possible. Use of modern implements and machinery in building construction has not been introduced in India to any appreciable extent. The attention of the building trade is drawn to the possibility of using various types of machinery and tools which are at present employed in advanced countries abroad for construction purposes.

Housing Standards and Estimates of Cost

19. The immediate need is the construction of a maximum number of houses for removing congestion and providing reasonably decent accommodation in the urban areas within the limited funds available for the purpose. The standards and specifications proposed by various commissions and committees in the past will, therefore, have to be re-examined. The situation being what it is, it seems to us impracticable to insist on standards which it is difficult, if not impossible, to achieve in the present conditions of building cost. All that we

can aim at is that the minimum, from the point of view of health and privacy, is provided, at least for the next few years. On this basis our suggestions are that houses should be built of the two following types :—

(*a*) In smaller towns, where land value is low and permits a less intensive development : a single-storeyed tenement with a carpet area of 220 sq. ft. and an enclosed space of about 250 sq. ft. The tenement will comprise a living-room, a kitchen, a verandah and a water-flushed latrine.

(*b*) In larger cities where land value is relatively high : multi-storeyed buildings in which each tenement should have a carpet area of about 240 sq. ft. comprising a living-room and a kitchen. The bath-rooms and latrines will have to be shared by a group of flats. In these constructions density of development should not exceed 20 tenements or 100 persons per acre. As far as possible ramps should replace staircases. It is not desirable to build more than 3 storeys unless lifts can be provided.

20. The minimum standards of services should be as follows :—

(*i*) every unit should have at least one water-tap for drinking-water;

(*ii*) the latrine should be preferably of the water-borne sanitary type which in a single-storeyed unit may have to be shared between two tenements,

(*iii*) effective provision should be made for disposal of kitchen and bath-water through the water-borne system; and

(*iv*) electricity should be provided for lighting, wherever possible.

21. We do not favour temporary constructions for relieving housing shortage, because in the long run the recurring liability proves heavier. It is not necessary that construction should aim at long life of houses but that it should provide adequate safeguard against instability and risk of fire.

22. Careful calculations have been made of the cost of construction of tenements of the types proposed. According to an estimate prepared by the Central Public Works Department, the cost of construction of a single-storeyed tenement in the smaller towns would be about Rs. 2,200. The cost of land would vary according to locality, but it may be expected that for a plot of about 55 sq. yds., which is the size comtemplated, the cost would not exceed Rs. 500. In the case of multi-storeyed buildings in larger cities, the calculations made in chapter III, paragraph 17, of the Report of the Environmental Hygiene Committee have been followed with an additional provision of 20% as the cost of staircase, balcony, etc, necessary in vertical development. In general the construction of a multi-storeyed unit would cost about 51% more than a single-storeyed tenement. The cost of land may be assumed as Rs. 700 to Rs. 1,000 per unit. The total cost of a tenement in a multi-storeyed building in the larger cities should, therefore, be about Rs. 4,500.

23. In calculating rent the subsidy is not taken into account. On the balance a return of 6½% is considered adequate to meet the interest charge on the loans which may be obtained from the Central Government or other sources, cost of maintenance at 1½% of the cost of

construction and municipal rates and taxes at 12½% of rent in the case of single-storeyed tenements and 25% of rent in the case of multi-storeyed tenements. The calculation takes into account the sinking fund charge on the net cost calculated on 40 years' basis. From the point of view of the workers care has been taken to see that, in general, rent does not exceed 10% of the average family earnings. On the basis proposed, the rent of a single storeyed tenement would amount to about Rs. 10 per mensem and of a tenement in a multi-storeyed building about Rs. 18/- per mensem in both cases inclusive of municipal taxes. It may be pointed out that even now the workerpays as rent Rs.7 to 10 per mensem for such inferior accommodation than is envisaged under the scheme. There should not, therefore, be any reasonable grievance in the matter of fixation of rent.

24. In this connection we would like to refer to the objections raised in certain quarters to the proposal for subsidising constructions by employers for housing their workers. It has been urged that as the houses will belong to private employers, there can be no justification for subsidising them from public revenues. A closer examination will show that the subsidy, in fact, does not amount to any substantial concession. We do not propose that the employers should have absolute right of ownership in these houses. We suggest that the management of these houses should vest in a committee consisting of the representatives of the employer and employees concerned together with a chairman nominated by the State Government. This committee will be responsible for allotment of tenements and generally for the management of the housing estate. We also propose that a tenant, who ceases to be in the employment of the employer who owns the property, must be given a reasonable time for vacating the tenement. The ordinary trade union rights of access to the workers must similarly be guaranteed. These provisions should be laid down in the agreement to be entered into by the employers when obtaining subsidy and loan from the Central Government. Later, it may be desirable to have the provisions incorporated in the proposed legislation on housing or in statutory rules framed thereunder. It will thus be seen that the ownership which we envisage is of a limited, indeed nominal, character. The employer owns the building only in the sense that his own employees, and not others, are housed therein. The employer also should have no objection to these provisions because by obtaining subsidy and loan at a cheap rate, he can provide accommodation for his employees, which is ultimately to the benefit of his concern. Even the fact that about 37½ % of the total cost will have to be initially borne by him does not mean any loss. The provision whereby the sinking fund charges are spread over 40 years, ensures recovery of the outlay, because the houses of the specifications proposed would last longer than 40 years. From the point of view of the State too, there should not be any objection to what seems, on the face of it, to be an outright grant to private employers because the immediate object is to house as large a number of industrial labour as possible and it can only be done by inducing capital to be invested in such schemes by an offer to meet a part of the initial cost. There is no other way in which large scale house-building can be undertaken for low-income groups in the present situation. It may be pointed out that the argument has no application in the case of the houses constructed by the State Government and the housing boards which will remain public property or the houses constructed by co-operative societies of industrial workers which will be owned by the society on what amounts to a hire-purchase basis.

HOUSING FINANCE

25. Originally the provision of the Central assistance towards industrial housing in the five year period was Rs. 13·5 crores and it was expected that a contribution of Rs. 15 crores each would be forthcoming from the employers and workers and that the State Governments would provide an amount of Rs. 3·7 crores. It was, however, suggested that an alternative scheme for raising finance would be to utilize money in the provident fund accounts created under the Employees, Provident Fund Act. We have reviewed our recommendation in this regard and we are now of the opinion that advantage should be taken of the alternative scheme which was put forward by us, namely, to utilize the provident fund deposits without imposing any additional burden on the industry. It is expected that contribution of the workers and employers to the provident fund scheme will amount to Rs. 15 or 16 crores annually, out of which, after meeting the cost of administration and withdrawals, a substantial amount can be expected to be available for investment every year. It is also expected that subsidies to the extent of about Rs. 2 crores per annum will be available from the Central revenues. A provision of Rs. 38·5 crores is accordingly suggested in grants and loans by the Central Government for housing schemes during the period of the Plan. Loans will be advanced to private employers and to workers' co-operatives repayable in 15 years and to the State Governments repayable in 25 years but the standard rent for housing estates will be calculated so as to spread over the period of the redemption of loans to 40 years in all cases.

26. Loans at reasonable rates should also be made available: (*a*) to co-operative housing societies of middle and low income groups referred to in paragraph 16, and (*b*) to local authorities, for clearance of slums and development of land, which, as will be explained subsequently, is considered an essential part of the housing policy.

TOWN AND COUNTRY PLANNING

27. The solution of the housing problem on a permanent basis has to be linked up with town and country planning. We have already seen how haphazard growth and ribbon development have been caused by inadequate legal powers to control use of land and construction of buildings, though it must be admitted that neither the State Governments nor local authorities have shown a full appreciation of the situation or utilised such powers as they already have to arrest the unhealthy growth. In some States, legislation on town planning has been enacted or is contemplated. It is, however, desirable that there should be a uniform policy in the matter and we recommend that there should be a National Town and Country Planning Act, which would provide for zoning and use of land, control of ribbon development, location of industries in areas considered suitable, clearance of slums, carrying out of civic and diagnostic surveys and preparation of Master Plans.

28. Regional planning has become even more important in view of the implementation of the several river valley schemes and community development projects. Such regional planning should take into account the population, agricultural condition, industries, and communications of a region with a view to secure a balance of population in the particular

area between villages, market towns and industrial centres. Such plans will aim at integrating agriculture and industry in rural areas, and will provide for dispersal of industries from existing centres, development of cottage and small-scale industries, services like medical aid, education and recreation facilities.

SLUM-CLEARANCE

29. Slums have grown up in practically all the major industrial cities of India as a result of laxity in enforcing building regulations, the indifferent attitude, till recently, to conditions of living amongst industrial workers and the high land values prevalent in certain cities which led the landlords to exploit their advantage to the fullest. These slums are a disgrace to the country and it is a matter of regret that Governments, both Central and State, have so far paid little attention to this acute problem. No city can be considered healthy which tolerates within itself the existence of a highly congested area with only the minimum amenities of life where some of the poorest elements of population are huddled together in almost sub-human conditions. It has been observed that slums are a national problem. A person who becomes a juvenile delinquent or a tuberculosis case because of slum conditions is no less a national than a local liability. From the national point of view it is better to pay for the cost of clearing slums than to continue to pay the mounting cost of slums and suffer their destructive effects upon human lives and property indefinitely.

30. In certain cities, improvement trusts have made some efforts at slum-clearance. There efforts have been rather sporadic in character, mainly because the improvement trusts, to a greater degree than other local authorities, suffer from limitation of funds. Few of them have independent sources of income and have generally to depend on uncertain grants and subventions from the State Governments and local authorities. The initial cost of acquiring slum areas which under the present state of the law have to be compensated not only at their market value but with an additional surcharge in consideration of the compulsory nature of acquisition, is almost prohibitive, in most areas, for improvement trusts to undertake any large scale clearance of slums. We consider the clearance of slums to be an essential part of a housing policy because the housing we propose is meant for the class of people who are now generally dwellers of slums. In our view the schemes of housing should proceed *pari passu* with the scheme of slum clearance, at least in the major industrial cities, so that when a housing estate is ready, steps should be taken to remove the slum dwellers to the newly built houses and to proceed with the clearance of the slum area in question.

31. The procedure to be adopted in such cases should be simple and of a summary nature. The competent authority should, after proper survey and enquiry, issue a clearance order. Compensation should be assessed on the basis of the use to which the land was put on the date of the issue of the clearance order. We suggest that no additional compensation on account of the compulsory nature of acquisition should be allowed in case of acquisition of slum areas, because we believe that such compensation ought not to be admissible to properties which are not put to social use. We do not think that the owners of slum areas perform any social service by accommodating large number of the poorest sections of the community in conditions of squalor and filth and we do not see why such social abuse of property should be

compensated for over and above the actual value. We agree, however, with the suggestion that where the owners of slum areas themselves come forward to rebuild and develop their properties within a specified period, on standard plans to be approved by the competent authority, there may be no need for acquiring such lands for the purpose of clearance of slums. We understand that in certain municipal acts provisions to this effect already exist.

32. We have already pointed out that the main difficulty which hampers a large-scale clearance of slums is insufficient financial resources of improvement trusts and local authorities. We, therefore, suggest that out of the provision of Rs. 38·5 crores for housing schemes in the period of the Plan a certain amount should be set apart every year for issue as loans by the Central Government to improvement trusts and other local authorities through the State Government concerned for providing the initial capital for acquistition and demolition of slums. We recommend that this loan should bear a low rate of interest not exceeding half per cent above the rate at which the loan is made available to the State by the Central Government.

Rural Housing

33. The problem of housing in rural areas is a vast one as even now 83% of the entire population of India live in villages. Having regard to the limitations of financial resources, a satisfactory programme of rural housing during the period of the Plan cannot be envisaged. It should, however, be appreciated that the pressure of population shifts towards cities and the slum problems resulting therefrom cannot be solved without ameliorating rural living conditions. Some opportunities for planning in the villages have arisen of late due to reforms in the land tenure system and establishment of community development projects. The problems which confront the rural areas are, however, somewhat different in character and do not call for expenditure of large slums for individual housing units. Unlike in towns, land value, and consequently congestion, is not a principal factor. The immediate needs of the villagers are primarily adequate water-supply, improved communications and arrangements for disposal of sewage and waste-products. Improvement in standards of rural housing should be aimed at primarily by utilising labour and materials locally available with only a modicum of technical assistance. By the use of aided self-help technique, preferably promoted through the Community Projects Administration wherever possible, a significant increase in the standard of living in the villages may be accomplished and the pressure on the cities relieved to a large extent. It seems to us that there are two principal ways in which Government can attempt to improve the standards of housing in the villages, *e.g.* by demonstrating improved standards through model houses built in selected areas and by assisting the villager to build better types of houses within his means and with the resources readily available to him through methods of aided self-help. Aided self-help housing should, however be planned in such a way that improvement over existing conditions is achieved without prematurely advancing beyond the living habits and means of the villagers.

34. With regard to model houses in selected villages, the fifty-five community development projects taken up under the Indo-American Technical Aid Programme offer the most suitable venue for demonstration of improved techniques and designs for rural housing.

Emphasis should be laid on the use of local materials with the object of teaching the villagers how cheap houses can be built which would provide adequate ventilation, remove the proximity of cattle and other animals and provide manure-pits, sanitary latrines and such other simple and essential amenities of decent living. The other method we advocate is, in many respects, a corollary of the first; that is to say, when the villager has learnt the technique of constructing a cheap and decent house within his means, there should simultaneously be a scheme to give practical effect to his desire to build along the lines he has been shown. Self-help in putting up houses has been a feature in Indian villages for generations. It is only necessary to encourage and foster the habit of the villager to build his own house by utilizing local building materials but providing greater amenities than are now available to him. Certain improvements can be readily effected without much additional cost, such as, improved floors by stabilization, simple devices for ventilation, provision of chimneys in the kitchen to draw away smoke, use of erosion-resistant mud plaster for walls and roofs of improved materials and designs. Aided self-help in housing aims at helping people to build their shelters out of materials available in their community. Generations of trials and error have produced very practical ways of using many kinds of local resources including timber, bamboo, lime, clay, stone, gypsum, sand, kaolin, murram, junglewood, grass and waste products of various types. It is, however, necessary to see that use of local materials does not degenerate into use of unsuitable materials like galvanized iron sheets, packing boxes, salvaged lumber etc. A practical approach, in our opinion, would be for Government to provide technical assistance in the form of skilled supervision and equipment. Pilot projects in selected villages can be taken up to teach the use of local materials. Since our proposals on urban housing practically relieve the State Governments from their share of the expenditure, we think they may be expected usefully to concentrate on improving standard of housing and living conditions in the rural areas. The provision for housing in the State Plans is of the order of Rs. 10·19 crores. The State Governments may, therefore, provide funds for house-building in rural areas by issuing interest-free or long term loans. The money cost of a house built with the villager's own labour is not likely to exceed Rs. 200 to 300 per unit. The State Governments may also perform a useful function by disseminating information regarding experiments in cheap housing which are taking place in other parts of India, such as, the pot-tiled vaulted roofing in Hyderabad State and stabilized soil construction in the Punjab.

35. In this connection we should like to cite the example of aided self-help in Puerto Rico as being worthy of emulation in India. Conditions in Puerto Rico are similar in many ways to those obtaining in this country. There, a rural development programme included secure tenure of building-cum-garden plots with aided self-help in house construction, in gardening, in water-supply and sanitation development and in multi-purpose co-operative activities. The aid given by the State consisted of equipment, materials and skilled assistance costing $ 300 per housing unit. The equipment consisted of a truck for hauling gravel and sand from nearby sources, concrete mixers, hand-operated cement block machines and wheel barrows. Building materials in the form of lumber, Portland cement and reinforcing steel were also supplied. The estimated cost of each housing unit, *viz.*, $ 300 was advanced to the villager as a loan with provision of repayment in easy instalments of about $ 2·50 a month. The subsidy involved

in the housing aspect of the scheme was the absence of interest on the loan. The cost of the house, if purchased, would have been $ 1500. Thus by investing his own labour and with a certain amount of help from the State, the villager in Puerto Rico saved $ 1200 or 80% of the cost of a house of much better quality than he could otherwise afford. Owing to the shortage of cement and steel in India, we shall have to emphasize the need for using local materials. But the principle of aided self-help, as practised in Puerto Rico can, if adopted, result in great improvement in quality at a very low cost.

RESEARCH

36. Research in building techniques and materials is necessary for achieving reduction in cost and improving the quality of work. It is also necessary to standardize building components and invent new materials or synthetic substitutes. In the West, building research has made considerable progress and has resulted in the discovery of new building techniques and finish without any substantial increase in cost. Problem of design, functional requirements of buildings, basic studies of structures, nature and properties of clay, minerals and soil are matters of very great importance which require research and further study.

37. In India, facilities for such research are provided in universities, such specialized institutions as the Central Building Research Institute at Roorkee, the Forest Research Institute and colleges at Dehra Dun, the Indian Standards Institution in Delhi, the Government Test House at Alipore, the Engineering Central Laboratory at Hyderabad, the Soil Mechanics Laboratory at Karnal in the Punjab, and the Road Research Institutes in Delhi and Bangalore. There are also the recognized institutes of engineers, architects and town-planners and the association of builders. Industrial undertakings which manufacture building materials such as the Associated Cement Company, the Tata Iron and Steel Company and the Indian Steel and Wire Products also provide facilities for research. There is, however, considerable scope for expansion and consolidation of the work which is being done by these institutions. In particular, stress should be laid on research in the following subjects :

(*a*) basic building materials such as bricks, tiles, high tension steel, laminated timber, calcination of ordinary soil for use as bricks and the possibility of utilizing indigenous materials as building components;

(*b*) possibility of use of substitutes such as timber, bamboo etc. for steel and other traditional building materials;

(*c*) revision of building codes, specifications and factors of safety ; and

(*d*) standardization and mass-production methods of building components and materials.

38. In India, experiments in cheap housing have been undertaken in stabilised soil construction in Mysore and the Punjab, hollow sand-cement block construction at Chittaranjan, Bangalore and Ahmedabad, pot-tiled vaulted roof construction in Hyderabad State and cement gunited wall construction by the Western Railways in Bombay. The Government Housing Factory in Delhi has produced prefabricated panels. These experiments offer scope for further research. Constructions in stabilised soil and sand-cement blocks for walls

and pot-tiled roofs are specially suited for aided self-help housing. In India, although prefabricated housing has made very little progress so far, there is little doubt that manufacture of prefabricated building components offers considerable scope.

39. It is also desirable to organize the building trade in all its aspects including training of labour and technical personnel of all grades. It is unfortunate that importance of technical training in house-building labour is yet insufficiently realized. In Europe and America, it has been found that training of personnel not only improves the quality of work but expedites the process of building. In India, the building activity in the public sector as a whole is estimated to involve an annual expenditure of Rs. 150 crores. The need of a requisite organisation for training facilities both to economise cost and to intensify the building programme can, therefore, easily be appreciated.

National Building Organisation

40. Though research is being carried on in different institutions for cheapening cost and improving building techniques, there is no authority to co-ordinate the results of such research and to make it available in a form which would have ready acceptance with Governments as well as private firms and individuals engaged in building activity. It is for this reason that the setting up of a National Building Organisation as an important activity connected with housing has become necessary. We suggest that such a body should be set up with the following principal objectives :—

(*a*) to co-ordinate and evaluate results of research on building materials and technical development now being carried on in different institutions;

(*b*) to suggest from time to time subjects of further research and development with due regard to their relative importance and urgency ;

(*c*) to incorporate the results of such research in actual building practice;

(*d*) to ensure effective utilisation of all available building materials including non-traditional materials;

(*e*) to guide industry and public in general on the use of new materials and techniques in building construction;

(*f*) to initiate proposals for increased production of building materials and their proper distribution;

(*g*) to examine building costs with a view to reduction in overheads and other expenses particularly in the public sector;

(*h*) to provide museums or standing exhibitions where methods of cheap houses and techniques for economic building can be displayed, explained and demonstrated;

(*i*) to take necessary steps for the standardisation of building components and to organise production and distribution of such standardised components on a large scale;

(j) to advise Government on technical matters including experiments, research, building education and new techniques; and

(*k*) to provide for training in building work and improved techniques and to organise refresher courses for engineers and architects.

41. Such a body should consist of persons who are eminent in their professions and whose decisions would carry weight. It must also have facilities for experiments in various types of building materials and it must be associated with a Ministry of the Central Government which should act as its executive wing to translate its recommendations into actual practice. We are, therefore, of the opinion that the Council of the Organisation should consist of such persons as the Chief Engineer, Central Public Works Department, the Director-in-charge of Civil Engineering in the Railway Board, the Road Development Adviser to the Central Government, the Engineer-in-Chief at the Army Headquarters, the Director of the Forest Research Institute, Dehra Dun, and the Director of the Central Building Research Institute, Roorkee. The Council should be assisted by an advisory body consisting of three experts, respectively on steel and concrete, clay products, and timber and forest products. There should be a whole-time Chairman who will coordinate the work of the Council and the advisory body. The National Building Organisation should hold annual conferences on building techniques and designs to which may be invited not only all those who are interested in the subject but, in particular, the Chief Engineers of Roads and Buildings of the State Governments. We consider that dissemination of new ideas through such conferences is of considerable value specially when persons in charge of large constructions are themselves convinced of the suitability of the new techniques and processes.

42. We also recommend the establishment of a permanent museum, or preferably several regional permanent museums, where exhibits of cheap housing can be displayed and the comparative costs, building techniques and methods, use of substitutes for traditional building materials can be studied with profit by engineers, industry and the general public.

Housing Boards

43. We recommend the setting up of housing boards which would be statutory autonomous bodies appointed by Government and responsible for implementing the housing programme. Such boards should be both Central and Regional and should have an executive body with a president, a whole-time secretary and not more than five other members, some of whom at least should be specialists in town-planning, architecture, and the social, economic and financial aspects of housing problems. The boards may have associated with them advisory bodies consisting of representatives of employers, tenants, building trade and the general public.

44. The principal functions of the Central Housing Board may be indicated as follows :—

(*a*) to administer the Central Housing Fund ;

(*b*) to activate housing programmes ;

(*c*) to administer such housing projects as are directly entrusted to it by the Central Government ;

(*d*) to lay down principles for the guidance of the Regional Boards, regarding selection and development of sites for housing schemes and fixation of priorities in the allotment of tenements ;

(*e*) to advise on rationalisation on building legislation and to prepare model building bye-laws for adoption by regional and local authorities;

(*f*) to suggest action in regard to slum clearance and improvement in environmental conditions of housing; and

(*g*) to recommend from time to time any legislation or amendment of existing legislations which have a bearing on the problems of housing, town and village planning, fixation of rents and such allied subjects.

45. There should be a Regional Housing Board for each State where there is an active housing programme; but in suitable cases, there may be more than one board in a State. The principal functions of these boards may be indicated as follows :—

(*a*) to administer the Regional Housing Fund;

(*b*) to activate the State building programme;

(*c*) to collect information regarding housing needs of different classes of people and to undertake surveys for the purpose;

(*d*) to undertake the construction of houses in selected areas according to approved plans;

(*e*) to allot tenements to workers and other low-income groups in accordance with the policy laid down by Central Housing Board;

(*f*) to establish new townships and industrial suburbs and to prepare Master Plans for the same;

(*g*) to undertake and encourage slum clearance and improvement of existing conditions of housing within their jurisdiction;

(*h*) to undertake maintenace of houses and other properties belonging to the Board and to realise rents for the same;

(*i*) to encourage self-builders both in the shape of co-operatives and individuals;

(j) to organise building trades and to provide facilities for vocational training for building labour;

(*k*) to guarantee loans taken by private builders for house-building, provided adequate securities are furnished; and

(*l*) to organise training for building-labour generally and in specialised types of work, such as laying patent-stone floors, reinforced cement concrete roofs and beams, etc.

46. The housing boards which we envisage should be statutory autonomous bodies. It will, therefore, be necessary to provide them with independent sources of income in addition to grants and subsidies which may be made available from the Central or the State Exchequer. While it is true that for many years, the Central Government will have to subsidise the construction of houses for the lowest-income groups and also to provide funds in the shape of loans, it is our intention that the housing boards should be financially self-supporting to a large extent so as to undertake housing programmes on their own, if not

for the lowest-income groups, at least for the middle classes. In States where improvement trusts have been set up, it may be considered whether their functions cannot conveniently be amalgamated with those of housing boards, the aims and objectives of both the organisations being more or less similar.

·47. The principal sources of revenue of housing boards may, therefore, be stated as follows :—

(*a*) grants from the Central or State Governments and municipal authorities;

(*b*) rents and recoveries from housing estates constructed by the boards;

(*c*) sale proceeds of lands acquired for development by the boards;

(*d*) betterment levies which the boards may be authorised to charge from persons benefiting from an improvement scheme;

(*e*) terminal tax on passengers and goods, arriving by road or rail, in cities where housing programmes have been undertaken within the jurisdiction of the boards;

(*f*) issue of housing bonds with the consent of the Central or the State Government, as the case may be, at rates half per cent above the current rate of Government borrowing; and

(*g*) loans from banks, insurance companies and such financing institutions on terms to be approved by Central or State Governments;

An additional surcharge on stamp duty on the value of immovable property transferred or mortgaged within the State is also recommended for those States where there is still scope for an increase in the rate of stamp duty.

LEGISLATION

48. We have already indicated the lines on which the proposed Housing Act and the Town and Country Planning Act should proceed. Here we shall confine our remarks to certain amendments in the existing legislation, which are considered desirable. We are of the opinion that the basis of assessment of compensation in the Land Acquisition Act of 1894 requires modification in respect of acquisition of slum areas as well as of lands which will be needed for the housing schemes. At present the cost of acquiring slum areas is prohibitive because not only their market value but an additional compensation at 15% has to be paid in consideration of the compulsory nature of acquisition. It may be that when a slum has been demolished and the area cleared and developed, the land can sometimes be disposed of at a reasonable price, especially if it is situated in the heart of a city. It is not, however, possible for housing boards and improvement trusts with their meagre resources, to make a considerable outlay for the purpose of acquiring slum areas and demolishing slums in the expectation of a reasonable return at a distant date. We, therefore, suggest that the Act should be modified in respect of payment of compensation which should be on the basis of the use to which the land was put on the date of the issue of the preliminary notification. We do not think that any additional compensation should be admissible for acquiring either slum areas or lands required for housing scheme for the industrial workers and low-income

groups. The Act should also be amended so as to provide for a speedier procedure for taking possession of lands on which housing projects are contemplated or where slum areas are to be cleared. Without such a provision neither the housing schemes nor schemes for clearance of slums will be expedited as the normal procedure of land acquisition is often very protracted.

49. We would also suggest that the various State legislations on the control of rent should be made uniform. In order to encourage private construction, without which the problem of housing cannot possibly be solved in the near future, provision may be made to exempt newly-constructed houses from the operation of the rent control legistlation for an initial period of, say, 4 years. The civil courts, however, should have jurisdiction, on the application of parties, to fix fair rents (excluding municipal rates) even in such cases on the basis of a reasonable return on the cost of construction, including services. With regard to the acquisition of premises for public purposes, we would recommend that the practice should be resorted to only exceptionally. It cannot be denied that requisitioning of premises on an extensive scale in recent years has had a deterrent effect on the building activity in the private sector. We would, therefore, urge upon Governments, both Central and State, to be cautious in having recourse to requisitioning house properties in times of peace.

CHAPTER XXXVI

SOCIAL WELFARE

The social structure in India has shown strength in endurance, and a unity of basic outlook in the midst of change and vicissitude. This strength has now to be demonstrated in productive and creative endeavour ; and the unity of the people has to be deepened and harnessed for economic development and cultural achievement.

2. The object of social welfare is the attainment of social health which implies the realisation of such objectives as adequate living standards, the assurance of social justice, opportunities for cultural development through individual and group self-expressions, and re-adjustment of human relations leading to social harmony. A comprehensive concept of living standards will include the satisfaction of basic needs like food, clothing and shelter as well as normal satisfactions of family life, enjoyment of physical and mental health, opportunities for the expression of skills and recreational abilities, and active and pleasurable social participation. The achievement of social justice demands co-operative and concerted effort on the part of the State and the people. These objectives are to be achieved mainly by revitalising the nation's life by creating well-organised and active regional communities in rural and urban areas to work co-operatively for national development. Such decentralised community groups will release national energy, extend the scope for leadership, and help to create initiative and organisation extensively in the remotest parts of the country.

3. The aim of social service in the past was essentially curative, and efforts were directed towards relief for the handicapped and the uplift of the under-privileged sections of society. It is now essential to maintain vigilance over weaknesses and strains in the social structure and to provide against them by organising social services. The aim of all social work now has to be the gradual rehabilitation of all weak, handicapped and anti-social elements in society.

4. Some of the important social problems like poverty, ignorance, over-population and rural backwardness are of a general nature and, in varying degree, they are influenced by factors like squalor and bad housing, malnutrition and physical and mental ill-health, neglected childhood, family disorganisation and a low standard of living. For a long time, society has remained apathetic to these conditions ; but with the awakening of political consciousness and the enthusiasm of organisations and workers to improve social conditions, there is a possibility of developing programmes which could gradually remedy the present situation. The economic programmes of the Five Year Plan will mitigate these problems to some extent, but the gains of economic development have to be maintained and consolidated by well-conceived and organised social welfare programmes spread over the entire country. In this chapter it is proposed to consider some of the more important problems of social welfare which need the special attention of both State and private welfare agencies.

5. The principal social welfare problems relate to women, children, youth, the family, under-privileged groups and social vice. The social health of any community will depend a great deal upon the status, functions and responsibilities of the woman in the family and in the community. Social conditions should give to the woman opportunities for creative self-expression, so that she can make her full contribution towards the economic and social life of the community. Problems relating to health, maternity and child welfare, education, employment, and conditions of work are dealt with elsewhere in this report. Some problems of women have to be dealt through social legislation; but other problems pertaining to health, social education, vocational training, increased participation in social and cultural life, provision of shelter, and assistance to the handicapped or maladjusted call for programmes at the community level. As women have to fulfil heavy domestic and economic responsibilities, adequate attention has to be paid to the need for relaxation and recreation both in the homes as well as in the community. The welfare agencies have catered to some extent to the needs of the widow and the destitute woman, but the quality of the service rendered by them and the nature of their work needs to be surveyed.

6. Considering the numbers involved, the needs of children should receive much greater consideration than is commonly given to them. There is a growing demand for child health services and educational facilities. The standard of child welfare services in the country can be improved if the rate of increase in population is reduced. Problems relating to family planning, children's health, infant mortality, education, training and development have been discussed elsewhere in this report. Malnutrition is perhaps the major cause of ill-health and lack of proper growth of the child. The feeding of the child in the early years is the responsibility of the family, and is dependent upon economic conditions and traditional food habits. The nature and extent of malnutrition has to be determined, and resources have to be found to supplement and improve the diet of children through schools and community and child welfare agencies. The problem of children's recreation and development outside educational institutions has received some attention during recent years, but play activities of children are considerably restricted in urban areas on account of the environmental conditions, lack of adequate space, and, to some extent, neglect of this vital need of the child by the family and the community. Not enough is known about the work of private agencies for the welfare of destitute and homeless children.

7. The juvenile courts and children's aid societies have so far touched a fringe of the problem of children's welfare. Certain special aspects may be briefly mentioned. The existing facilities for handicapped and deficient children are far from adequate and suitable agencies have to be created. Hospitals provide treatment for polio, congenital deformities, fractures, bone disorders and other diseases, but there is a need to extend existing services and provide special institutions and care for disabled and crippled children. At present deficient children attend educational institutions together with normal children and seldom receive treatment and special training to enable them to overcome their handicaps. The subject needs to be studied carefully. The problem of juvenile delinquency has already received considerable attention and many of the States have special legislation. Juvenile delinquency may often be the result of poverty and many offences may be traced to the connivance or support of adults.

8. The youth constitute the most vital section of the community. In recent years, young people have had to face and have been increasingly conscious of problems such as inadequate educational facilities, unemployment, and lack of opportunity for social development, national service and leadership. The problems of health, education and employment of youth have been considered as aspects of national problems in these fields. Social welfare is primarily concerned with the improvement of services provided for the benefit of youth by welfare agencies with the object of promoting development of character and training for citizenship and for physical, intellectual and moral fitness. It is necessary to encourage initiative among youth so that through their own organisations, they can develop programmes of youth welfare and national service. Ways must also be found to give opportunities to youth for active participation in constructive activity. Such training and experience will equip them for shouldering the responsibilities of leadership in different spheres of national life.

9. Traditionally, the family has been left largely to its own resources to deal with most of its problems, although in some cases it may be assisted by the larger community groups (such as caste) to which a family may belong. General problems relating to health, education and employment have been considered in the relevant sections of this report. Questions relating to status and rights, property, inheritance, etc., are the subject of social legislation. The gradual break-up of the joint family and the emergence of the small family has increased its economic problems and burdens. Family responsibilities have now to be borne at a comparatively younger age by the head of the small family than happened in the joint family. This creates the need for greater guidance and assistance in dealing with family problems. The increasing complexity of the social situation and handicaps arising from physical disability, ailment or unemployment render it more difficult for the family to provide a sense of security to its members. This fact suggests a number of problems which, along with other problems such as divorce, desertion, and treatment of mal-adjusted members of the family, need to be studied carefully if welfare agencies are to develop suitable methods of treatment for guiding and assisting those in need.

10. There are a number of under-privileged communities such as the scheduled tribes, scheduled castes and other backward classes including criminal tribes. The problems of poverty, ill-health, and lack of opportunities for development affect them to a larger extent than many other sections of the society. The subject is considered in a separate chapter.

11. Every community has its share of those who are physically handicapped such as the blind, the deaf and dumb, and those who are crippled and infirm. Reliable statistics are not available about the extent of the population which suffers from such handicaps. A certain number of welfare agencies are already working in this field, but little information about their resources and their ability to deal with the problem is at present available.

12. The main problems to be considered under the description of social vice are prostitution, crime and delinquency, alcoholism, gambling and beggary. These problems have existed for a long period, although necessarily their nature and extent vary according to the prevailing social and economic conditions. Some of them have to be dealt with largely by

local communities, and the approach and treatment have to be varied from place to place. The character and magnitude of these problems of social defence have to be determined carefully before the value and efficacy of the existing agencies and programmes could be assessed. Social legislation deals with many of the social evils with a view to controlling and even eradicating them, but its actual implementation needs to be watched. Among the practical problems to be resolved are the demarcation of the relative roles of State and private agencies, determination of the machinery of enforcement, estimation of the resources required, examination of methods, development of correct programmes, and creation of public opinion in favour of an objective and dispassionate approach to the problems of social vice.

AGENCIES

13. As the social structure becomes more complex, the State is called upon to play an increasing role in providing services for the welfare of the people. The Central Government, the various State Governments and local self-governing bodies, each in its own sphere, have to ensure that they have at least the minimum administrative machinery for dealing with social problems. What form this machinery takes will depend on their particular circumstances and requirements, but it is certain that without the necessary machinery they will not be able to pursue their programmes.

14. The functions of the social welfare machinery of the Central and State Governments may, for instance, be :—

(1) to study the need for and the efficacy of social legislation,

(2) to execute programmes of social welfare,

(3) to assist, both directly and through other agencies, the development of social services, the study of social problems, and the creation of trained personnel for social administration,

(4) to assist specialised and private agencies through guidance, and financially, and to protect the interest of society by a measure of regulation and control,

(5) to initiate pilot projects, or help field organisations to develop such projects, in order to demonstrate the efficacy of programmes, methods, leadership and organisation,

(6) to promote initiative in and improvement of social services by supplying information, materials, publications, audio-visual aids, etc., and

(7) to take over social services of vital importance initiated and organised by private agencies when these develop beyond their ability to manage.

15. Local self-governing bodies can do much to co-ordinate welfare activities in their areas and promote co-operation between their departments and the work of private agencies. Local committees or councils of social service agencies could undertake activities such as the following depending upon the resources which are available or can be raised :—

(*a*) taking effective measures to alleviate suffering, especially by providing emergency relief ;

(*b*) organising and assisting community centres ;

(*c*) improving housing conditions, clearing slums and providing welfare services and special amenities for communities residing in slum areas ;

(*d*) promoting child welfare activities ;

(*e*) providing parks, playgrounds and other amenities for physical recreation and welfare ;

(*f*) supporting private social service agencies and institutions for social education, women's welfare, youth welfare, and welfare of handicapped persons and underprivileged communities ; and

(*g*) creating public opinion and assisting the vigilance authorities in the control of social vice and beggary.

16. The inter-relationship between the various activities has to be emphasised and the necessary co-ordination assured both in the Central Government and in the States. One aspect of this co-ordination would be to secure that legislation relating to social problems follows broadly similar principles. In cases where grants-in-aid are given by a State authority to a private agency, it is desirable to lay down general directions for improving the content of the programmes and their administration. A measure of supervision and inspection should also be provided in order to maintain standards of efficiency.

17. A major responsibility for organising activities in different fields of social welfare, like the welfare of women and children, social education, community organisation, etc., falls naturally on private voluntary agencies. These private agencies have for long been working in their own humble way and without adequate State aid for the achievement of their objectives with their own leadership, organisation and resources. Any plan for the social and economic regeneration of the country should take into account the service rendered by these private agencies and the State should give them the maximum co-operation in strengthening their efforts. Public co-operation, through these voluntary social service organisations, is capable of yielding valuable results in canalising private effort for the promotion of social welfare. One of the most important tasks of the State is to conduct a survey of the nature, quality and extent of service rendered by voluntary agencies in different parts of the country, to assess the extent of financial and other aid that they are in need of in order to develop their programmes of work, and to co-ordinate their activities. A sum of Rs. 4 crores has been provided as grants-in-aid to voluntary social service organisations for strengthening, improving and extending the existing activities in the field of social welfare and for developing new programmes and carrying out pilot projects. It is envisaged that this fund of Rs. 4 crores should be administered by a board to be set up by the Central Government to which a great deal of administrative authority will be devolved. The board should be predominently composed of non-officials who have actual experience of field work in promoting voluntary welfare activities.

18. It is necessary to co-ordinate the programmes of various agencies so as to guide them into broad streams and bring added strength and intensity of purpose to welfare activities. Such co-ordination calls for a common approach and a co-operative outlook on the part of

the organisers of voluntary social work. Further, it will be necessary to induce agencies to agree to subordinate their individual interests to some extent and thus make collective effort possible not merely in the execution of programmes, but also in the economic and rational use of personnel. Such co-operation could also lead to joint effort in obtaining resources. Co-ordination need not involve on the part of the co-operating organisations loss of individuality or of freedom to organise and to carry out programmes. Co-ordination will have to be of two types. In the first place, there may be functional co-ordination on the part of national organisations striving to achieve specific objectives like physical fitness, child welfare, youth welfare, social education, community organisation, etc. Secondly, there may be effective co-ordination of effort on the part of agencies functioning in the same regional area or community, so that the various agencies may serve each area through a common pool of activities.

Training for Social Work

19. The contribution which social services make will depend to a considerable extent upon personnel and leadership. A general understanding of the philosophy and history of social work, the structure and functions of society, the nature and extent of social problems, the methods and techniques of social work, and of the details of the programmes and how best their results may be assessed, will help improve the quality and efficacy of all services organised by State and private agencies. The training of social workers should of course include knowledge of conditions prevailing in fields in which they are to work, and social workers must possess the spirit of service and the character and energy to execute programmes despite handicaps and limitations and with such resources as may be readily available.

20. There are several schools of social work in India and the setting up of some other institutions on similar lines is being contemplated in some of the States. There are important problems involved in these institutions which require specially qualified and experienced personnel, careful selection of candidates for training, special training for fields in which there is scope for employment, and adequate opportunities for field-work experience. Trained social workers are needed in large numbers for rural areas. It should be possible for the existing schools of social work to draw students from rural areas and to arrange for their training in the field in selected centres organised by rural welfare agencies. Universities and colleges in or near rural areas could also develop training programmes for rural welfare. Agricultural colleges could introduce intensive social welfare courses and field-work programmes as part of their curricula. Similar institutions with greater emphasis on social anthropology could be created in tribal areas.

21. It is not possible for many voluntary organisations in the country to employ highly trained personnel for their ordinary programmes and activities. It is, therefore, necessary to arrange for training at the community level for field workers, instructors and supervisors. The existing schools of social work, specialised social service agencies, social welfare agencies functioning at the national and State level should provide opportunities for such training. Arrangements for 'in-service' training should also be made by the larger voluntary organisations which have worked in the field of social welfare for many years. Further, arrangements have

to be made for the training of voluntary workers who will be needed in large numbers during the coming years. It is especially desirable that voluntary administrative and field personnel should be given some elementary training in social work.

22. The emergence of State social services and of large central organisations to deal with important social problems and the lack of opportunities for higher training in the social sciences within the country indicate the need in selected cases for training and study abroad in specialised fields. It is necessary that persons who go abroad for training should first have sufficient knowledge and experience of Indian conditions and problems.

Social Research

23. Scientific research into social problems and fields of social work is at present limited to a few universities and the schools of social work. A provision of Rs. 50 lakhs has been made in the Plan for research and investigations relating to social, economic and administrative problems of national development. Research studies now undertaken are not adequate or extensive enough for the purpose of getting a comprehensive knowledge of basic social problems. It is necessary to stress the need for ensuring that research personnel receive adequate training in methods and techniques. Secondly, it is important that the results of any research that is carried out should be made available to the public. The appropriate machinery for guiding research in the fields mentioned above is at present under consideration. In the field of social research, it will be necessary to give a broad direction concerning the subjects on which research should be undertaken, carry out some important research projects, directly co-ordinate the work of research agencies in so far as this may be necessary, and assist these agencies in improving the quality of their work and bringing the results of research to the attention of the public. Universities, schools of social work, social welfare agencies and special research organisations can co-operate in research projects and in field investigations which could be of practical value in dealing with social problems. Assistance could also be given by way of literature and equipment needed for field research.

Resources

24. The total resources of the country being limited, it is essential to ensure that funds available for social welfare programmes on the part of State agencies as well as voluntary organisations are put to the best possible use. This is a problem to which the proposed social welfare board could give detailed attention. While the State may assist suitable voluntary agencies, the principle of self-help should be applied to social welfare, and the resources needed should, as far as possible, be obtained from the local communities. Social services are organised to carry out specific welfare activities. The total resources required by social service agencies in the country are obtained from State grants, income from endowments, public collections and income from special activities and from membership fees. Due to the

prevailing economic conditions in the country, it is sometimes true that the public response is not as effective as it should be if the various organisations were to carry out their programmes efficiently. The appeal to the public is likely to yield greater results if care is taken to observe some elementary conditions such as the following:—

(1) the right methods for collection of funds are adopted,

(2) definite programmes of activities stating the manner in which funds are to be utilised by an agency are placed before the public, together with a psychological appeal,

(3) the effort of collection is well-organised,

(4) the appeal is addressed to as wide a section of the community as possible. Full use should be made of various modes of publicity and the public should feel that the cause is one worth supporting, and

(5) correct reports and accounts are provided and the public convinced of the integrity and the bona-fides of the organisations and the organisers concerned.

25. Funds available with endowments and trusts may be an important method of supplementing resources which the State and private agencies can provide. We, therefore, recommend enquiries by States into this subject which may offer a basis for legislation concerning the use for approved purposes of funds held by endowments and trusts.

Social Legislation

26. One of the important methods of bringing about progressive social change is social legislation. A good deal of legislation of basic importance has been enacted during recent years. The existing legislation needs to be scrutinised more intensively, especially with a view to finding out to what extent it serves the present social and economic objectives of the nation and to ascertain how far it can deal adequately with current social problems. Some machinery is needed for reviewing existing legislation and suggesting possible modifications, and if necessary, the repeal of obsolete laws in order that all existing legislation may be brought into conformity with the requirements of the Constitution. Social legislation has at times to be punitive in order to protect society from anti-social elements; but wherever possible, the legislation should be preventive and protective, and where it deals with the offender, its approach should be to rehabilitate the individual after eradicating the contributory factors to anti-social conduct.

27. Social legislation cannot by itself deal with social problems in an effective manner unless it is backed by the force of public opinion. Social legislation has also suffered owing to incomplete enforcement. This is especially due to lack of adequate machinery for enforcement, and also because of insufficient resources and personnel both with public and private agencies. Social legislation can be better enforced by associating social service agencies with

agencies set up by the State. As regional communities become organised for social action, voluntary co-operation of the community based on enlightened understanding will go a long way in facilitating the enforcement of the law.

28. A critical survey of the prevailing legislation will suggest how far the legislative provisions are inadequate, to what extent enforcement must be strengthened and the directions in which new legislation is needed. The proposed social welfare board or social research organisation, or any other appropriate agency may undertake a comprehensive survey to study the problem of social legislation. Legislation relating to the prevention of child marriages and the prevention of immoral traffic, certain housing and public health laws, laws affecting tribal areas and communities as also certain criminal laws constitute examples of social legislation which needs to be revised in the light of the existing needs and conditions. Among the laws which have to be enforced more effectively than they are at present are those relating to offences on the part of children, prevention of beggary and the control of prostitution. New legislation is required for the effective operation of social services in various fields. The registration of social service agencies with a view to inspection and sanction of grants-in-aid is one of the primary needs.

WOMEN'S WELFARE

29. In order that the woman may be allowed to fulfil her legitimate role in the family and the community, adequate services need to be promoted for her welfare. The position and functions of the woman differ to a great extent in different communities, and, therefore, community welfare agencies will have to workout their programmes and activities according to the specific requirments of the areas in which they work.

Important problems relating to the status and rights of woman have to be dealt with by legislation. Special organisations on the part of the Central or State Governments for promoting the welfare of women have not yet been developed to any great extent. Well-organised social service departments are needed in the States if they are to initiate more comprehensive programmes of woman and child welfare and achieve better co-ordination between the efforts of public and private agencies. The major burden of organising activities for the benefit of the vast female population has to be borne by private agencies which have already done considerable work for the promotion of women's welfare. The All-India Women's Conference has 37 branches and about 300 'sub-branches' in the country. The National Council of Women in India has 12 major branches, and the Girl Guides Association, the National Y.W.C.A., the Association for Moral and Social Hygiene, and the Trained Nurses Association in India, are affiliated to it. The Kasturba Gandhi National Memorial Trust does extensive work for the welfare of women and children in rural areas and has representatives to carry out activities in eighteen States. There are numerous small organisations all over

the country which have done valuable work for women. These organisations provide dispensaries and maternity centres, homes for destitute children and shelter homes for women. They also organise programmes for education, recreation and training in handicrafts.

30. Organised efforts are needed to stimulate activities at the community level, both in rural and urban areas. This should be done by community centres, social education agencies, and agencies working for the welfare of under-employed groups, by organising groups of women who could come together for activities such as recreation, education, arts and crafts, and co-operative participation in social and economic activities of the whole country. Groups could also be organised as " mothers' clubs or unions " in all ante-natal and post-natal clinics, milk centres, co-operatives, and as a part of trade union activities. Such groups could especially be organised in slum areas and backward areas and amongst working women and women of backward classes in general. A large number of voluntary workers will be required for such groups, and these could be recruited by women's welfare organisations. Girl guides and girl students in high schools and universities could assist in these activities as part of a programme organised on a national basis. The existing women's organisations in the country could be strengthened if their membership and activities are extended, and if they organise programmes for creating women's organisations in towns and in the larger villages. Such local organisations need trained workers, guidance and assistance which could be given by leading women's organisations through travelling workers, training camps, instructional manuals, and other literature.

31. For various reasons the available statistics on commercial vice are limited and unreliable. India is a signatory to the international agreement for the suppression of traffic in persons and of prostitution which was reached in 1950. However, clandestine prostitution and even brothels continue to exist in the country together with tolerated areas in some of the cities. Clandestine prostitution exists in many forms and the danger of the evil is augmented when the woman is not assured economic security by the family or the community, or when she is psychologically maladjusted in terms of her sexual and material desires, or when her economic activities do not permit a normal family life. This kind of prostitution is further promoted by activities of persons who organise traffic in women and children. Immoral trafficking sometimes takes place as between backward and poor rural areas on the one hand, and the more prosperous urban areas on the other. Inter-provincial trafficking is also not unknown.

32. Certain social evils are products of inherent maladjustments in the social order and their complete eradication needs basic social adjustments. It is realised that such adjustments are only possible when social justice is more effective, there are reduced opportunities for concentration of wealth, exploitation is eradicated, economic conditions are improved, and social morality is established by well-adjusted patterns of common behaviour at the basic community level. The following measures are suggested for dealing with the problem :

(1) an advisory committee should be set up by the Central Government to make proposals and review progress in respect of law and policy in different States relating to the prevention and treatment of social vice ;

(2) enforcement of the law should be more effectively carried out ; measures to enforce the law may include, wherever necessary, the creation of a separate vigilance branch within the police force ;

(3) whenever it is found difficult to eradicate the tolerated areas, adequate arrangements should be made for medical assistance and facilities for the treatment of venereal diseases ;

(4) wherever it is found that clandestine prostitution is in existence, efforts should be made to eradicate soliciting ;

(5) institutions for the protection, care, shelter and rehabilitation of fallen women do not exist in sufficient number, and cases of neglect are frequent. There is a need for more institutions organised by local self-governing bodies and private social service agencies and provision for regulation, inspection and control of homes which should be under the management of trained personnel. Such homes should provide shelter, medical aid and assistance for marriage ; and

(6) there is a need to strengthen existing specialised and private agencies like the vigilance associations and societies for the preventions of traffic in women.

CHILD WELFARE

33. The child, being always dependent, has to be provided for by its parents and the family, the community and the State. Considering the size of the population involved and the nature and complexity of the problem, the total responsibility of welfare has to be borne cumulatively by the family, the regional community, and the State at three different levels. The problem of survival and the high incidence of infant mortality and birthrate has been dealt with in the chapter on Health. The problem of education is dealt with likewise in another chapter. However, certain aspects of the problem of health, growth and care of the child need the attention of social welfare agencies.

34. In a country where poverty is extensive, there is need to supplement the diet of children. Effective ways have to be devised by the State and private agencies to see that the necessary nourishment is received at least by under-nourished children in schools and in established institutions. To augment State resources, an effort should be made by each local community to assist educational institutions and child welfare organisations in supplementing the diet of the child in some way. At present, skimmed milk powder, cases of baby foods, semolina, vitamin tablets, pabulum cereals, codliver oil, etc., are received as gifts from various sources. Efforts to organise collections in kind at the community level could be supplemented by grants-in-aid from charity trusts and local self-governing bodies. It is desirable that State organisations, the Red Cross, the Indian Council of Child Welfare and

other important national and State organisations for child welfare should co-ordinate their efforts both for the collection and distribution of supplementary foods for children. The five most suitable agencies for the distribution of free foods to children at the community level are (1) milk centres (2) maternity and child welfare centres (3) community centres (4) day nurseries and schools, and (5) play centres.

35. *Feeble-mindedness*—The attention of the educational authorities is naturally concentrated in the early stages on formal education. The problem of feeble-mindedness is gradually beginning to receive the attention of psychologists and educationists in the country. Uptil now there are no adequate institutions in the country for the care and treatment of feeble-minded children. A beginning has been made in dealing with this problem by the Society for the care, treatment, and training of children in need of special care. A few pilot projects in selected areas could be developed by specialised agencies for child welfare. One of the major handicaps in this respect is the absence of a sufficient number of trained psychologists and psychiatrists and teachers specially trained to deal with mentally backward children. Provision should be made for training personnel as early as possible.

36. *Child guidance clinics*—The first child guidance clinic was organised in India in 1936. Since then a small number of child guidance clinics have been brought into existence in some of the larger cities. It is desirable that at least one child guidance clinic should be brought into existence in every State and, wherever possible, such clinics should be organised by municipalities. The organisation of this important service is also likely to be handicapped due to want of psychiatrists and child psychologists. It is essential to train a number of psychologists and case workers in the schools of social work in order to provide trained personnel for dealing with problem children.

37. *Creches*—An important service which has already made considerable headway in India for the welfare of children is the organisation of creches, day nurseries and other types of pre-schools. In large factories in major cities, already a number of creches are organised with a reasonable standard of efficiency in the interest for children whose mothers work in the factories. In 1950, Bombay had 177 creches with about 3,000 children, Madras had 93 with about 2,334 children, Bihar had 26 with 796 children, Madhya Pradesh had 16 with 360 children and Uttar Pradesh had 7 with 126 children. These figures reveal that only a very small percentage of children of working mothers take advantage of these creches, specially because it is the tradition in India for children to be looked after by other women members of the family. As it is now compulsory under the Factories Act of 1948 to provide a creche in factories employing 250 or more women special efforts may be made by factory owners to induce mothers to send their children to the creches.

38. *Play activities*—Play is a vital need in the life of the child ; and its playlife in the home, school and community environments consists of playthings, companionship, and playground activities. Local self-governing bodies as well as the community should provide playspace for children either as a reserved part of a community playground, or as a separate playground equipped with suitable accessories for play. Only a small number of fairly well-equipped playgrounds are in existence in the country ; and their number needs to be very considerably increased in urban as well as rural areas. Proper maintenance and management of

playgrounds are essential in order to provide necessary guidance, supervision, and protection to children during play hours. Such a playground service could be provided by voluntary welfare agencies and youth and students' organisations.

39. *Children's centre*—In order to extend the scope of children's recreations, the programmes for children's centres are now being expanded so that they can be equipped with playgrounds, indoor space for a children's library, a dramatic hall, and facilities for developing child arts and handicrafts. Such centres may also provide a case work service where it is not possible to organise a child guidance clinic.

40. *Handicapped children*—One of the most difficult problems which deserves urgent consideration is the problem of lone, orphaned, neglected, deserted and destitute children. It is necessary to develop special institutions, children's villages, boys' towns and similar organisations where a large number of such children could be given protection, shelter, care, education and training till they are rehabilitated and can function in a normal way. At present, such institutions are mainly organised by private agencies, and especially by children's aid societies. Most of these institutions deal with a very small number of children, and it is desirable to initiate a number of pilot projects where a large number of children could be brought together under the care of specialised social welfare agencies in the various States.

41. The practice of adoption has existed in India for centuries. Such religious adoptions are not legally controlled. Besides, this benefit is invariably given to the boy. In some cases the orphaned child is institutionalised, or becomes a beggar, or becomes a victim of illegal trafficking and exploitation. Orphanages exist all over the country, both in urban and rural areas. The need to ensure registration, supervision and control of these institutions is now realised, and legislation and machinery of enforcement have to be devised to protect children in institutions organised by private agencies. Such institutions, with the support of the Government, should be able to provide a reasonable opportunity for growth, development and rehabilitation of all the inmates.

42. *Juvenile delinquency*—The complexities of the problem of delinquency and the inadequacy of resources, institutions, and personnel have come in the way of a study of the nature and extent of the problem. At present, only a small number of delinquent children are dealt with, and the treatment given to them does not provide for full rehabilitation. The problem of delinquency is extensive because of the prevailing general conditions in which children are brought up. Poverty, neglect, slum life and frustration may lead to acts of delinquency. Case treatment often reveals the delinquency of the parent, experience of cruelty at home, and encouragement of delinquent acts by elders.

43. In some States progressive legislation for dealing with delinquency already exists ; in others, no legislation has yet been enacted. The Ministry of Education has drafted model legislation for the guidance of States. Most of the Children's Acts deal with neglected, dependent and destitute children, difficult, uncontrollable and delinquent children and victimised and exploited children. In some cases the provisions of the Children's Act are in

conflict with Wards and Guardians Acts. All existing legislation and treatment should be reviewed from the standpoint of a more comprehensive approach towards the problem.

44. The weakest link in the treatment of the problem is the absence of one suitable agency for the enforcement of the legislation, the absence of an adequate police force, and inadequacy of court facilities, children's institutions, and probation officers. It is necessary to set up juvenile aid committees in cities, consisting of a small number of selected and specially trained police officials who will examine cases of delinquents, and deal with cases of minor delinquencies without reference to courts. The inadequacy of existing certified schools and fit-persons institutions is well known, and in order to provide the right conditions, a beginning has been made in some States to create children's villages, boys' towns and other institutions with proper conditions of rehabilitation. Pilot projects for this purpose are contemplated in certain States where the incidence of delinquency is high. Institutions like juvenile reformatories exist in the country, and these need to be adapted and re-organised to suit the present objectives. The practice of providing even temporary habitation and shelter to juveniles in correctional institutions where adult under-trials and prisoners live should be discontinued.

45. The general improvement of child welfare services in India requires greater co-ordination and better leadership for the several hundred child welfare organisations that exist in India. The child welfare movement, under the guidance of the Indian Council for Child Welfare needs to be encouraged and strengthened; and it should be made more representative of children's organisations in the country. There should be a strong national headquarters to carry out the objectives of the movement, and maintain and improve standards of child welfare. It is proposed to create a national centre of child welfare in a central place, with similar organisations in some of the States. The national centre will become the experimental station, training centre, seat of pilot projects and clearing house for information and material on child welfare.

46. *Children's organisations*—Though comparatively small in size, organisations for children have come into existence in different parts of India for providing recreation for children. The *Balkan-ji-Bari* is a developing organisation and its main value lies in bringing together children from all over India in camps and national festivals. The *Bachon-ki-Biradari* and *Kishore Dal* are similar organisations in the north. Such organisations deserve the support of local self-governing bodies and child welfare agencies. The junior sections of the Boy Scouts and Girl Guides organisations have been long engaged in giving valuable training to children outside the educational institutions. These organisations help to develop children for a fitting role in the youth movement.

FAMILY WELFARE

47. There are a few agencies dealing exclusively with the problems of the family in India, and they cater mainly to local needs. Sectional groups assist their members with small doles and provide help in education, medical assistance and housing accommodation.

Recently, some family welfare agencies have come into existence in Madras, Bombay and other places. The case work method is being used to assist families in rural as well as urban slum areas. This is a small beginning which shows a new approach to family problems. The organisations of extensive community welfare programmes in urban and rural areas creates the possibility of organising family welfare services on a small scale, including especially a family counselling service. As more case workers become trained in the various schools of social work, it will be possible to undertake a survey of family mal-adjustments and handicaps in selected community areas and to assist families in dealing with their economic and pathological problems.

48. The programme of social education ought to make a valuable contribution towards the promotion of family welfare. There is need to give general information to adults about subjects like family relationships, family planning, marital hygiene, domestic economy, mother-craft and homecraft. This information could be supplemented by a programme of audio-visual aids dealing with all aspects of family life. Family welfare agencies should be able to publish literature giving specific information about the treatment of family problems.

The Central as well as State Governments may assist private organisations, trusts and funds in creating and running institutions or centres for the development of small-scale industries, crafts and handicrafts. Such institutions will provide avenues of employment and training and help families in avo idng destitution or in supplementing small family incomes.

YOUTH WELFARE

49. Youth is the stage in life when, through training and development, immaturity approaches maturity for work, marriage, social participation and cultural attainment. The period of youth should stand for growth, development, preparation, action and leadership. Youth matures quickly in an atmosphere in which there is freedom, activity, recognition and opportunity. The life of youth should not be over-occupied with training and education, but there should be opportunity for self-expression, comradeship, community life, and national service.

50. The youth movement includes two kinds of organisations, namely, those which work for the welfare of youth, and those composed of the youth themselves. In varying degrees, youth organisations are interested in or are influenced by political emphasis. In order that youth organisations should grow and make an effective and continuing contribution to national life, their endeavour should be to give their main attention to activities which would promote youth welfare. Besides, the strength of the national youth movement can only be built up as a result of unity in action and comradeship amongst those who work for youth welfare in any of its aspects.

51. The objectives of the youth movement may be classified to cover two separate aspects of the movement : (1) those that contribute towards self-preparation, personality development, character formation and citizenship ; and (2) those that lead to organised action in

the service of the community and the nation. Youth has with courage opposed conventionalism and unhelpful traditions, but the immediate task before youth in India is to organise and work hard to carry out constructive tasks in the national programme. There is need to coordinate the work of all youth organisations into a single powerful youth movement, functioning through a national council of affiliated youth organisations. Such an organisation, whilst permitting its members to work for their own objectives and carry out their programme independently, will work to build up the individual and collective strength of all youth organisations. The national youth movement has to create a national headquarters with young men and women of vision and ability who should be trained youth organisers, aware of the problems of youth, and trained to develop group work, recreational activities and national service programmes which can be quickly canalised into various fields of service. Assistance may be given by the State to the existing youth and other organisations to create and strengthen the youth movement.

52. Special measures are needed to strengthen the scout movement. The Bharat Scouts and Guides organisation had 1,73,902 cubs, 2,65,296 scouts and about 50,000 *bulbuls* and guides on its rolls in 1951. The movement has 21,393 trained and warranted scouters and 3,997 helpers. The scout movement has to play a vital role in serving the younger generation and in organising them for the active service of the country. Not only has the movement to be extended to villages, but the quality of its service has to be developed. For this purpose the national as well as State headquarters have to be strengthened and adequately equipped for creating and training a larger number of scouters and promote efficient guidance and supervision to its units. The scout movement should receive the support of the States, the local self-governing bodies as well as the community. There should also be co-ordination of activities between the scout movement and the other youth and children's organisations. The youth and student organisations should be able to provide an increasing number of scouters who will be required to extend the work of the movement in the near future. The National Cadet Corps is another movement for youth which functions in the universities for the promotion of physical fitness, discipline, character and the general fitness of youth for defence, national service and personal welfare. The membership of the National Cadet Corps is voluntary, but universities and educational authorities should encourage youth to take advantage of this organisation, and membership of the National Cadet Corps should be considered an added qualification for the purpose of employment.

53. Youth needs guidance, advice and help with regard to personality problems, sex difficulties, and situations in home and community life. The organisation of community centres in urban and rural areas will make "youth counselling" possible, provided there are mature persons who are given a brief training on youth problems, and who are willing to undertake counselling on a voluntary basis. It is possible to introduce "youth counselling" as one of the activities in educational institutions as well as in youth organisations and trade unions, and it could also form part of the labour welfare progress in factories.

54. Opportunity for physical activities, group companionship, arts, hobbies, and contact with Nature can be given through organised programmes of local boys' and girls' clubs, inventors' clubs, young farmers' clubs, hobby clubs, etc. These

do not require large resources, and the younger folk themselves can contribute and find the necessary funds to run their own organisations as independent programmes or as part of community centres or as extra-curricular activities in educational institutions. An important contribution towards the development of youth is made by youth camping and travelling programmes. A beginning has been made in India with a Youth Hostels Association, which is part of an international organisation. The movement needs organisers, and houses with caretakers, which could be used as hostels. University hostels, *dharamshalas*, houses which can be spared, hutments on camp sites, and houses near holiday resorts should be made available to youth travellers with minimum equipment and boarding and lodging facilities at lowest cost. The Government can help the youth movement by allowing special reduced rates on railways, steamships, and State and municipal motor services to members of approved youth organisations. Whenever merit awards are given to youth in universities, and sports, cultural and other organisations, it should be possible to give travel prizes and journey scholarships.

55. *Youth and national service*—Youth have made a vital contribution to the struggle for freedom, and they must be given the opportunity to give their contributions to constructive activities and programmes of economic development and social welfare. Reference has been made in the chapter on ' Education ' to the contribution students will be called upon to make towards national service. An amount of Rs. one crore has been provided for a comprehensive programme of youth camps, labour service for students, etc. The programme will have to be worked out in collaboration with universities and other educational institutions as well as youth and student organisations. Youth participation in constructive activities should be based on personal inclination and interests, and youth should be encouraged to become members of organisations that carry out specific activities amongst the people or there could be special youth groups for carrying out specific programmes. It is also possible for educational institutions to organise " service clubs " as one of the extra curricular activities. The enthusiastic participation of youth is required in programmes and activities for promoting physical fitness and community recreation, social education, child welfare and youth organisation. Youth could also render valuable help to institutes organised to render different types of service to the needy, handicapped and mal-adjusted members of society.

National Physical Fitness

56. The chapter on Health has dealt with the problems of ill health and disease in India. The subject of national fitness deals with the maintenance and improvement of health of every citizen in order to develop efficiency. In the absence of legislation in the form of a National Fitness Act, it is necessary that physical fitness programmes are promoted by the States, as well as by the community.

It is possible for a nation to attain by organised effort and education certain physical qualities, abilities and skills so as to be able to perform the normal functions of life, be prepared for the protection of home and nation in times of external agression and

danger, and contribute towards national efficiency for economic production. A physical fitness standard for the individual should include the three factors of agility, strength and endurance which are the basis of all physical qualities and skills. In order to achieve the above, a national standard of physical achievement for all adults has to be laid down.

57. In a country like India, with numerous climatic, regional and racial differences, a universally applicable national standard may be difficult to attain and allowance will have to be made for sex differences, the racial factor, types of physical region, climatic conditions, standard and content of nutrition, and prevailing averages of height and weight for specific racial groups. The standards to be achieved may be laid down by a committee of health and education experts and other social scientists after consulting authorities and ascertaining conditions in different parts of the country. It is possible for every individual to strive to attain this standard individually ; but the State, educational authorities and private social welfare and especially physical welfare agencies should attempt to provide facilities and opportunities to assist the individual to attain this standard. The community project authorities, the Bharat Sewak Samaj, all sports and play-ground organisations and universities should aim at reaching the proposed national standards.

58. The maintenance and promotion of national physical fitness requires the proper management of housing and sanitation, the care of diet, the need for relaxation and rest, the promotion of play-ground, sports, physical culture and camping movements, execution of intensive programmes of child welfare, the protection of the health of working men and women, and the adoption of preventive measures against diseases and psychological disorders like neurosis.

59. Play-ground programmes are naturally spread over in different areas. Regional co-ordination of all agencies and activities will promote the growth of leadership, the training of personnel and the development as well as the economic use of resources. National organisations for physical education, sports, recreations, etc., should be strengthened, so that they can guide and assist the building up of play-ground activities, athletics, community recreation and yogic exercises. As play-ground activities are to be developed through community programmes, and as youth activities are also to be promoted extensively, there will be increasing demand for leadership, in these fields. It is suggested that one of the existing training institutes for physical education should be converted into a national institute.

60. As national fitness programmes involve activities for large numbers of persons, the problem of resources becomes the greatest handicap in the promotion of the movement. It is imperative that some kind of play-ground should be available for the use of every community centre, school and youth organisation. Equipment is also needed for physical fitness programmes. When developing play-ground programmes, it is necessary to keep in view the

four important objectives of recreation, education, leadership training, and social participation. India has yet to make much headway in the field of sports and steady support and encouragement are needed.

61. India has a rich gamelore with a variety of games adapted to age and sex groups and to local physical conditions and cultural patterns. There is need to survey play activities in different areas, prepare a manual of instructions for specially selected games, and enrich the gamelore of the whole country by organised publicity through documentary films demonstrating each game. Indian gymnastic programmes have considerable appeal in urban as well as rural areas. Community programmes should help the revival and extension of such activities in every part of the country.

Crime and Correctional Administration

62. Research in the problem of crime in India has not yet made sufficient advance. The immediate task is to change or modify existing policies and programmes in order to adjust them to new objectives which seek to protect the interest of society and achieve a total rehabilitation of the offender. Crime is stimulated by conditions prevailing in society and it is due to personal and psychological factors. Economic conditions have always been a factor contributing to crime. Intensive surveys to study the causes, nature and extent of crime should be undertaken by research organisations, universities and other private agencies. The treatment of the crime problem is intimately related to the nature of legislation, and the approach of the judiciary to crime. So far there has been no basic approach towards the various problems of correctional administration, but a number of useful steps have been recently taken by States and there is growing interest in the reform of penal administration.

63. The problem of correctional administration has to be dealt with in three stages : the pre-committal stage ; the administration of correctional institutions ; and probation and after-care. The principle that no person should be considered an offender till he is proved guilty should govern the treatment of accused and under-trial persons. The administration of police lock-ups and jails needs to be reviewed in the interest of the proper treatment of the inmates of the lock-ups. Special care must be taken when first offenders are committed to jails, so that no serious psychological harm is done to them. The administration of correctional institutions is governed by jail manuals. A recent conference of State Inspectors-General of Prisons has proposed the appointment of a committee to suggest the basis on which jail manuals may be revised to suit the new objectives, methods and programmes of correctional institutions, remove the inflexibility of rules, and permit greater freedom to the authorities on the spot to interpret sympathetically the rules so as to serve the objects of rehabilitation. Changes in the jail manuals will naturally require a revision of the Prison and Prisoners' Act which would need to be modified to meet changes in correctional administration.

64. The need to utilise prisons as agencies for the rehabilitation of prisoners is generally accepted. Modern principles of penology require that each prisoner is to be dealt with as an individual, and corrective handling should be so devised as to be in consonance with his abilities, aptitudes, back-ground and also with the paramount purpose of enabling him to earn his living honestly as a law-abiding member of society. While this must be the ideal

and all plans must be directed to this end, the possibility of utilising the manpower resources represented by prisoners on projects of socially constructive character should be fully explored. Central prisons and district jails should receive the assistance of Departments such as those concerned with industries, agriculture and irrigation, so that the maximum advantage can be taken of the labour available in correctional institutions. A probation and after-care service is likely to minimise the cost of maintenance, as prisoners will not be called upon to serve long sentences during which they will be maintained by State Governments. As life in prison has to be organised so that the inmates live as a community and as the method of case work is to be increasingly used to deal with individual cases in correctional institutions, welfare officers should be progressively employed in central prisons and first grade district jails. Officials of correctional institutions should be given special training both before employment and during service.

65. Prisons and jails may need to be reconditioned so as to provide arrangements to suit different classes of prisoners. Separate correctional institutions may be provided for female convicts. It should also be possible to develop open and close farm workshop prisons, agricultural colonies, and work camps at important work projects. The provision for Borstals, both open and closed, will also need to be expanded. It will be necessary to bring about greater uniformity in legislation applicable to first offenders and others charged more than once for minor offences. The appointment of probation officers and the release of prisoners on parole should remove a great deal of congestion from correctional institutions, reduce the cost of prison administration, and enable many prisoners to live as normal citizens after they have served their sentences. The work of private agencies like prisoners' aid societies and district probation and after-care associations has suffered on account of limited resources. It is desirable to entrust after-care work to probation officers, and a beginning may be made by organising after-care departments in central prisons and first grade district jails to deal with problems relating to work and employment, housing, health and family relationship. New developments in the administration and programmes of correctional institutions require the guidance and advice of experienced personnel working together in a central organisation. Such an organisation can assist programmes in the States, undertake experimental work and pilot projects, and function as a centre of information and publicity on all matters relating to correctional administration. Recognising the need for such a central organisation, the recent conference of Inspectors-General of Prisons recommended that a national bureau of correctional institutions may be established in the Ministry of Home Affairs.

Welfare of the Physically Handicapped

66. The physically handicapped person, if he is not able to receive medical attention, or when such attention is found to be of no avail, has to depend upon his family for maintenance and shelter. Absence of family support leads to beggary, or dependence upon public charity. Inadequate medical treatment, absence of vocational training, and lack of opportunities for social adjustment of the persons to the environment has contributed to the sufferings of a large number of persons who ought to receive the intelligent assistance of the community, and if possible an effective assistance from the State. Physically handicapped persons are classified as (1) those lacking in one or more physical senses, *i.e.*, blindness and deafness, or

combinations ; (2) those suffering from movement difficulties ; *i.e.*, orthopedic, malnutrities and cardiacs ; and (3) lepers, epileptics, rachitics, and dumb persons. The total number of afflicted persons in India has hardly ever been correctly estimated. This is due to defective enumeration, lack of definitions, and the desire of persons to avoid publicity to their handicaps. To obtain better estimates of afflicted persons, sample surveys in selected urban and rural areas are needed. Some provision for physically handicapped persons exists in several States. Voluntary associations which are already working the welfare programmes for this class of persons need to be encouraged and assisted.

Community Approach in Social Welfare

67. The field of social welfare will expand in the measure in which local communities accept responsibility for solving their own problems. The State has undoubtedly a vital role to play and, as its functions develop, an increasing field of social work becomes linked in one way or the other with programmes initiated or supported on behalf of the State. Community welfare programmes embody four inter-linked ideas, namely (1) self-help and mutual service, (2) maximum use and development of local resources through organised community life, (3) economic betterment and cultural development through social participation in co-operative effort, and (4) achievement of community objectives through the minimum amount of assistance from the State.

68. These ideas are applied in different fields of social welfare. According to its circumstances and problems and its size and resources, each community sets before itself its principal objectives and organises the effort for their achievement. The community approach finds perhaps its most striking sphere of action in the community development programme included in the Five Year Plan. This programme is mainly rural at present but in some States it has a large urban component as well. The rural community development programme has already been described in an earlier chapter. The programme concentrates on certain strategic features of village life, but has within it the element of growth, so that its essential aim is to transform not only the technical environment in the village, but also the social and economic relations and attitudes within the village community. There is no section of the community which stands outside the influence of the programme.

69. Community programmes hold high promise in urban areas as well. Cities and towns have to be divided into manageable units and the more backward areas, in particular, the slum areas, selected for intensive social work. Urban life tends to shift the emphasis from the community to the individual with all the consequences that this implies. There is, therefore, considerable need to establish community centres which will foster a sense of community responsibility, civic pride and a feeling that the interests and welfare of individual members are realised best through community action. Through community centres established in the main through their own effort, local urban groups can survey their own urgent social and economic needs and seek solutions through co-operative effort. Innumerable problems, touching upon every aspect of the life of the community and more especially affecting its weaker members, at present remain negleced and unattended. Organised community action on the part of local urban groups in the cultural field no less than in solving common problems can make a vital contribution towards raising the level and enriching the content of urban life.

CHAPTER XXXVII

WELFARE OF BACKWARD CLASSES

SCHEDULED CASTES AND OTHER BACKWARD CLASSES

The evolution of the social structure during centuries of feudalism in regions which were not then developed by communications led to the existence of large communities which suffered handicaps and disabilities imposed by other economically and culturally dominant groups. The chief amongst the underprivileged or specially handicapped groups are the Harijans, *i.e.*, the scheduled castes, the tribal population, groups which were hitherto known as criminal tribes, and other groups who can be considered to constitute the weaker section of the population and who are socially, economically, and educationally backward.

2. The term ' backward class ' is difficult to define. Backwardness is expressed in lack of adequate opportunity for group and individual self-development, especially in economic life and in matters of health, housing and education. It is measured in terms of low levels of income, the extent of illiteracy, and the low standard of life demonstrated by living conditions.

3. The present population of the 779 scheduled castes in India is 498·37 lakhs*. This figure does not include backward groups which are not mentioned in the schedule. Such groups are known as " other backward classes " and their population, according to the Ministry of Education Scholarship Board, was 546 lakhs in 1951. Article 340 of the Constitution has empowered the President to appoint a Commission to determine the conditions of backward groups not included in the schedule of castes who could be considered to be socially, economically and educationally backward. This Commission, known as the Backward Class Commission, will shortly be appointed, and one of its functions will be to prepare a schedule of other backward classes for the approval of the President.

4. The country has now passed the stage of discussing the problem of the origin or sanctity of the institution of untouchability. That the stigma of untouchability should be totally and unreservedly eradicated has now been accepted by the whole country. According to Article 17 of Part III of the Constitution " untouchability is abolished and its practice in any form is forbidden ". But untouchability, being an age-old institution, has taken roots in the psychology and social structure of certain communities. Its eradication is incomplete so long as it receives a mental recognition and persists indirectly in some form in the social structure. A fourfold programme is, therefore, necessary, *viz.*, (1) removal of untouchability by law ; (2) removal by persuasive and educative processes through social education ; (3) the practice of democratic behaviour in social and recreational life ; and (4) opportunities afforded

*The Scholarship Board of the Ministry of Education has shown the population of Scheduled Castes as 517 lakhs in 1951.

by the State and private agencies for self-development and expression and for the betterment of health, education, economic life, and living conditions. Improved living conditions, education, and participation in a society with extensive economic interdependence and facilities for communication, movement, and contact, will in due course of time lead to a total integration of these groups with the rest of the country.

5. Welfare services for scheduled castes are included in the special programme for the welfare of the backward classes. Education is the most urgent need of these communities, and extensive measures for increasing educational facilities have been taken by the State. In some of the Part A and B States these concessions extend right up to the university stage. Emphasis is placed in almost all cases on vocational or technical training. The concessions usually take the form of free tuition, stipends, scholarships, provision of books, stationery and other equipment. In certain cases the aid extends to clothing and mid-day meals. The opening of primary schools in areas where scheduled castes live in large numbers and the running of hostels for their benefit in district towns and educational centres are the other two usual activities. For vocational training there are peripatetic parties of instructors in Bombay and West Bengal and also the established technical and vocational training centres of the *Bakshi-ke-Talab* in Uttar Pradesh. The trainees, who are almost always stipend holders, also receive loans and subsidies to enable them to settle down in their respective trades. A total amount of about Rs. 3 crores has been provided in the Five Year Plans of the State Governments for the education of the 'backward classes'.

6. For those residing in rural areas there is a provision for the allotment of waste land. This is usually accompanied by the grant of a taccavi loan for the purchase of agricultural implements and bullocks.

7. A certain percentage of Government positions are reserved for all scheduled caste candidates, and in almost all these cases the standards of age, qualifications or experience are also relaxed. A minimum number of vacancies are reserved for them ; there is, however, no bar to their recruitment and employment in larger numbers.

8. The State Governments have provided a sum of Rs. 10 crores for the benefit of scheduled castes during the period of the Plan. The Central Government have also provided a further sum of Rs. 4 crores for expenditure during the remaining period of the Plan. The general aim is to follow intensive programmes rather than to dissipate the limited resources on loosely conducted activities over a wide area. Provision is made for the more liberal disbursement of money under different heads to institutions working in this field, and an effort is being made to improve efficiency by channelling expenditure through effective and well-supervised organisations. Since most of the Harijans live in isolated colonies, they offer good scope for the organisation of community centres. Measures for achieving the welfare of the scheduled castes are circumscribed by the amount of available resources. The pace of improvement is, however, being accelerated, and still more progress is expected as larger resources are devoted to this work.

9. The chief voluntary agency for the welfare of Harijans is the Harijan Sevak Sangh It has 35. State branches and 325 district committees. Its activities are directed towards the all-sided welfare of Harijan communities.

THE SCHEDULED TRIBES

10. The tribal population in India is accepted to be the oldest population of the land. The communities have lived for centuries in the forest and hilly regions, and at present they are found in a wide central belt beginning with the Aravalli Hills in the West and extending into parts of Bombay State, Madhya Pradesh, Bihar, Orissa, West Bengal and Assam. There are tribes in the north in the southern ranges of the Himalayas, and also in the south in the western Ghats and eastern Ghats and in the Vindhya and Satpura mountains.

11. The schedule of the tribes entitled to the special rights conferred on scheduled tribes by the Constitution was issued by the President in March 1950. The population of the 245 tribes included in this schedule was in 1950 178·75 lakhs, which is 7·8 per cent of the entire population*.

12. Heretofore the problems of the tribal people have been approached from different angles according to the interests of the persons dealing with them. Amongst these have been anthropologists, administrators, missionaries, social workers and politicians. There developed one school of thought which held that the tribal population should be permitted to live in isolation from other more organised groups, without even the interference of the political administration. There may be a good deal of justification for such a policy of non-interference; but it is not easily practicable when tribal life has been influenced by social forces from without, and tribal communities have reached a certain degree of acculturisation accompanied by the penetration of communications into the tribal areas and of social services for the betterment of their lives.

13. The conditions are now generally such that there has to be a positive policy of assisting the tribal people to develop their natural resources and to evolve a productive economic life wherein they will enjoy the fruits of their labour and will not be exploited by more organised economic forces from outside. So far as their religious and social life is concerned, it is not desirable to bring about changes except at the initiative of the tribal people themselves and with their willing consent. It is accepted that there are many healthy features of tribal life, which should be not only retained but developed. The qualities of their dialects, and the rich content of their arts and crafts also need to be appreciated and preserved.

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*Note.—The percentage of the tribal population to the total population in the different States (after partition and merger) is as follows :—

Part A States : Assam—33·9, Bihar—14·1, Bombay—9·2, Madhya Pradesh—22·6, Madras—1·1, Orissa—25·4, Punjab—Nil. Uttar Pradesh—0·5, West Bengal—6·5.

Part B States : Hyderabad—4·1, Jammu and Kashmir—0·7, Madhya Bharat—15·4, Mysore—0·1, Pepsu—Nil, Rajasthan—11·7, Saurashtra—0·06, Travancore-Cochin—1·8,

Part C States : Ajmer—15·6, Bhopal—9·0, Coorg—11·6, Delhi—Nil, Himachal Pradesh—Nil, Kutch—0·3, Manipur—29·8, Tripura—6·4, Vindhya Pradesh—5·9.

14. Article 275 of the Constitution requires that a special financial grant should be provided for programmes for the social and economic welfare of the tribal population living in scheduled areas. Under this Article the Central Government have made a provision of Rs. 12 crores for the period of the Plan, but detailed schemes have not yet been fully worked out. The various States have provided another Rs. 11 crores for the development of tribal areas. Their programmes include schemes for the building of roads, the improvement of water supply, the provision of irrigation, the development of agriculture, animal husbandry and cottage industries, and for increased educational and medical facilities.

15. The North East Frontier Agency is populated by a large section of the tribal population and their economic and cultural development has to be brought in line with the progress made in the rest of the country. A sum of Rs. 3 crores has been provided for the physical, economic and social development of this area and its tribal inhabitants and a Five Year Plan has been drawn up.

Development of the Economic Life of Scheduled Tribes

16. *Communications*—The problems of different tribes may vary in different regions ; but priority has to be given to the maximum development of their economic life. Most of the tribal areas have been neglected so far as roads and communications are concerned. The importance of communications has now been recognised and a sum of over Rs. 2 crores is provided in the State Plans for developing the roads in the tribal areas. This amount is separate from the road grants available from the Central and the State Governments. Great care has to be taken however to see that communications are not prematurely developed so as to permit economic exploitation by outside and more advanced communities.

17. *Water supply*—Tribal areas are mostly hilly and rocky and, therefore, there is a considerable shortage of water. In areas which are covered by thick jungles, the water becomes at times unfit for drinking and for cultivation owing to the accumulation of decayed leaves. Special efforts are therefore being directed towards the construction of wells and the improvement of irrigation facilities.

18. *Forest economy*—Tribal economy in the past was able to develop or exploit the physical region without control or hindrance. Later on, there was in many parts of the country an intensive and yet unsystematic exploitation of the physical region inhabited by the tribes, with very little consideration for their economic welfare. It is desirable that tribal communities should be made the primary agents for the care and development of the forests and the exploitation of forest resources. Forest schools should be started to bring the young tribals up to love, care for, and work systematically for the enrichment of the forests which will mean in turn the betterment of their own lives.

19. *Agriculture*—The nature of agricultural development in tribal regions will vary according to the prevailing agricultural practices, the type of soil, and the forces that promote agricultural initiative. Though adequate facts and statistics are not available, land in the

tribal areas consists generally of poor, rocky and barren soils on which in most cases only coarse cereals, pulses and roots are cultivated. The problem of land ownership has become increasingly difficult during the last few decades. Many tribal groups became landowning communities, but in times of famine and economic difficulty, their lands passed to absentee landlords. The problem of land restoration and distribution is linked up with the larger problem of land reform affecting all agriculturists, but the tribal population could be induced and assisted to move to large uncultivated areas which are suited to their modes of living.

20. The tribal communities in hilly regions have long been accustomed to the system of shifting cultivation. Though in parts of the country they have already adopted more settled methods of agriculture and have taken to terrace cultivation using the normal village implements, there are areas where the system of shifting cultivation still prevails. The introduction of improved methods of agriculture has to be attempted after a study of local conditions and with due regard for the level of understanding of the tribal communities concerned.

21. People in the tribal areas are illiterate, but in spite of this and the many other difficulties in the way of the co-operative movement, a large number of co-operatives worked by social workers on behalf of the tribals have come into existence in several States. Co-operative activities should be developed in a planned manner throughout the tribal areas so that their benefits may not only be reaped by the cultivator but also by other sections of the people. Various States have created new organisations to help the agriculturists in the tribal areas. The Grain Banks or Beej Kosh in Bombay, the Grain Golas in Bihar and other States help the people with seeds and with the storage of crops so as to build up food resources, and also give guidance for the improvement of agriculture.

22. The community development projects will now be able to accelerate the speed of agricultural development in the tribal areas. The following areas which have been selected for community development include tribal communities :

Assam (*Cachar District*)	One development block.
(*Darrang District*)	One development block.
(*Tribal Areas in Assam*)	Two development blocks.
Bihar (*Santal Pargana District*)	One development block.
Orissa (*Kala Handi District*)	One development block.
Madhya Pradesh (*Bastar District*)	One development block.
Tripura (*Nutan Haveli*)	One development block.

23. *Arts and Crafts*—Tribal communities are invariably accustomed to more than one type of economic activity. Their free life, initiative, dexterity and desire for basic goods for domestic, religious and social life lead them to exploit the resources of their environment, and thus they are the creators of a large number of interesting crafts, which are practised not so much to supplement their income as to supply them with some of the necessities of life.

They are not, however, yet fully conscious of the richness of their environments and they require to be helped to exploit commercially the clay, stone, animal, bird, insect and plant life of the forests, using their skills in organised co-operatives and exporting their products to the markets of the land.

24. The physical environment stimulates arts and skills which are peculiar to the culture of each tribal community. Their principal form of artistic expression is dancing which has become the inspiration of professional dancers in rural and urban areas. The cultural life of the tribes should not be interfered with ; on the contrary they should be given encouragement and opportunity to develop their tribal cultures.

25. *Health and hygiene*—The deficiency of health services in the rural areas is well known, and the tribal areas, which are lacking in communications and where the population is scattered over vast distances, have hardly been provided with any medical assistance up till now. Some of the diseases prevalent in tribal areas are malaria, yaws, scabies, venereal diseases, small-pox, leprosy, tuberculosis, trachoma, glaucoma, and elephantiasis. Unhygienic conditions, malnutrition, bad water, lack of protection against the climate, and in some cases harmful social customs and practices are among the causes of the widespread prevalence of disease.

26. Throughout most of the tribal areas the belief in 'possession' and in the demoniacal causation of disease still prevails. But a patient programme of health education, with the assistance of mobile dispensaries, and the gradual introduction of regular medical services will introduce to the people the advantages of scientific methods in dealing with problems of health and disease.

27. There is a need for comprehensive health surveys in selected areas covering diet, beliefs and health practices, the etiology, prognosis and incidence of various diseases, and herbal medicines and other tribal ways of healing. It may be advantageous to develop such of the medicines and healing practices as are found to have some scientific basis or therapeutic value.

28. *Education*—Article 46 of the Constitution requires that special attention should be given to the education of the children of scheduled tribes. It will, however, have to be conceded that the usual formal system of education is not likely to prove suitable to the tribal communities. It is desirable that the Commissioner of Scheduled Castes and Scheduled Tribes and the Department of Scheduled Castes and Tribes in the various States should deal with the problem of the education of tribal children for some time before the Departments of Education take over the management of institutions in tribal areas. Students in tribal areas will receive a primary-*cum*-basic education for eight years and basic education will receive the main attention of the Department of Scheduled Castes and Tribes during the next five years. The programme of basic schools will have to be adjusted to the needs of forest, pastoral and agricultural communities of a very simple type.

29. The problem of which language should be the medium of instruction in tribal areas has already received consideration not only in the Planning Commission, but by the various agencies which are working for tribal welfare. It is generally accepted that the medium of

instruction in the basic schools should be the mother tongue of the child. The regional language will be introduced at the beginning of the upper primary level, and this will be the State language.

30. State programmes of tribal education include the creation of residential education *ashrams*, vocational and technical training schools, and hostels for tribal students.

31. *Leadership and personnel*—It is desirable that there should be provision for special courses on tribal welfare, including field work experience, in the training institute of the Indian Administrative Service, as well as in such schools of social work as can afford it. There is also a need to train community organisers and other types of social workers from amongst the educated youth of the tribal communities.

CRIMINAL TRIBES

32. The criminal tribes are made up of a few pastoral communities which could not adjust themselves to the economy of settled life; small sections of forest tribes which broke away from larger tribes because they could not adjust themselves to economies resulting from the forest and land policies of successive governments; and certain groups which were temperamentally and psychologically unable to adjust themselves to a law-and-order society and found it profitable to take advantage of concentrated properties in settled economies rather than to earn their livelihood by productive labour.

33. These nomadic communities preferred to continue their nomadic habits in urban areas where they would not find themselves bound by the need of working on land or by the laws governing the possession of land. Many of them developed peculiar concepts of property and practiced anti-social activities. But not all the persons in these communities were criminal and unwilling to adopt normal vocations and occupations. Many members of these communities have shown an inclination to become small traders and shopkeepers, and they possess skills which can be used to develop various crafts. With some persuasion they can, if given aid, become agriculturists.

34. On the whole most of these communities have now settled down and only small sections of them follow their old predatory habits. There may be some groups who sometimes take to anti-social activities due to economic conditions or the opportunities offered by their environment. Certain groups still prefer to move from place to place, improvising shelter and finding ways of living without having to settle down in any particular area. The last estimate of persons belonging to criminal tribes gave their number as 2,268,348 and there were 198 tribes enumerated as "criminal".

35. The Indian Constitution has accepted the principle that no man can be considered guilty unless he is proved to be so in a court of law. Accordingly the Criminal Tribes Acts have been repealed and with effect from 30th August 1952 have ceased to be in force in any of the States. With the repeal of these Acts the problem of the criminal tribes has to be

dealt with according to new programmes and policies. The original objective was to safeguard the interest of the larger society, and this was done without much consideration for basic principles of jurisprudence. Even if criminality was a fact, adequate efforts were not made to rehabilitate the individual and the group and to adjust the community economically to the environment. The new policy will be to treat all such communities as backward classes. Special efforts will be made by the States to rehabilitate the communities economically. Individual acts of criminality will be dealt with according to the ordinary law.

36. There are two major solutions to the problem of such groups. The first is to achieve their economic rehabilitation ; and the second is to apply to the children of these communities a well thought out scheme of education which will gradually wean them from their present practices. The members of these communities possess vitality, energy, resourcefulness and skill. Rather than paying attention to their known evil habits and weaknesses, it should be possible to concentrate on the positive qualities disposing them to engage themselves in creative activities in which there is the element of adventure, romance and achievement. It has been difficult to find economic opportunities for them outside the ordinary spheres of agriculture and handicrafts, but certain selected crafts have been found capable of engaging their interest and skill. The experiment should be made of settling these communities in new areas which need to be developed, and where they will be put under leadership which is able to understand their temperament and problems. A suitable method of dealing with criminal tribes settlements, wherever they exist, would be to convert them into Community Centres under a trained Community Director.

37. It is likely that some members of groups previously styled criminal tribes may still prove to be uncontrollable and be responsible for anti-social acts. In such circumstances the Probation of Habitual Offenders Act should be applied to them in selected areas. Under its provisions it should be possible to intern them within their homes and to release them on licence after a defined period not exceeding three years or help them to settle peacefully in an area and occupations suitable to them.

CHAPTER XXXVIII

REHABILITATION OF DISPLACED PERSONS

Within a few months of the Partition of the country in August, 1947 nearly 5 million Hindus and Sikhs living in West Pakistan had to leave their homes. Under somewhat different conditions 1·5 million displaced persons migrated from East Pakistan. The disturbances in East Pakistan early in 1950 brought another million or so. According to the 1951 Census, about 7·5 million persons had moved into India in search of permanent homes, 4·9 million from West Pakistan and about 2·6 million lakhs from East Pakistan.

2. The displaced persons from West Pakistan are dispersed over the Punjab, PEPSU, Delhi, Uttar Pradesh, Saurashtra, Bombay, Madhya Pradesh, Madhya Bharat, Ajmer, Bhopal and Rajasthan. They are more or less evenly divided as between urban and rural avocations.

3. Although 2·6 million Hindus had moved into India from East Pakistan by the beginning of 1951, there are still seven or eight million Hindus living there. The influx continues ; sometimes it slows down and sometimes, as during recent months, it assumes serious proportions. There are at present over 2·1 million displaced persons in West Bengal and of them, 1·4 million are in Calcutta and the two neighbouring districts of Nadia and 24-Parganas. The economy of West Bengal has thus been subjected to very serious strain. It is estimated that 92 per cent. or about 2·4 million of these displaced persons derived their livelihood from agriculture or ancillary occupations.

RURAL REHABILITATION

4. In some States of India, namely the Punjab, PEPSU, Rajasthan and Delhi, large areas of agricultural land were left vacant by the Muslim evacuees. The Government of India utilised these lands and explored other avenues for rural rehabilitation of displaced persons from West Pakistan. Three distinct policies were followed :—

(*i*) quasi-permanent allotment of evacuee agricultural land in the Punjab and PEPSU;

(*ii*) allotment of evacuee agricultural land on a temporary basis in other parts of India, especially the States of Delhi and Rajasthan;

(*iii*) settlement of culturable waste lands reclaimed by the various State Governments or the Central Tractor Organisation.

The first policy constituted the single largest measure of rehabilitation and was carried out in respect of displaced land-owners from West Punjab and of Punjabi extraction from other parts of West Pakistan. These persons had left behind 6·7 million acres, whereas the area abandoned by Muslim evacuees in the Punjab and PEPSU was 4·7 million acres, or in

terms of 'standard acres' (into which differences in qualities of land and differences of rights were reduced) 3·9 and 2·4 million respectively. This gap of nearly 1·5 million 'standard acres' was madeup by applying graded cuts on a slab system. A cut of 25 per cent. was imposed on holdings upto 10 acres. Higher cuts were applied to the larger holdings and the highest cut was at the rate of 95 per cent. in the case of holdings over 1,000 acres. An owner of 10 'standard' acres received an allotment of 7½ acres, of 100 acres 51½ acres, of 500 acres 126½ acres, of 1000 acres 176½ acres and of 5000 acres.376½ acres. The allotment was on a quasi-permanent basis. In all, 2·4 million 'standard acres' were allotted to about half a million families. About 93 per cent. of the allotted area has been taken possession of by the allottees. The allotments of those who failed to take possession of their lands were cancelled and the lands so vacated were reallotted to displaced persons whose claims had not been met so far.

5. In addition to displaced persons who received quasi-permanent allotments of land, there were about 76,000 agriculturist families who had either been working as tenants of Muslim evacuees or had been settled temporarily on evacuee land immediately after the Partition although they had left no land as owners in West Pakistan. Over 33,000 of them have already been satisfactorily settled as tenants-at-will and through new tenancy legislation and otherwise the Punjab and PEPSU Governments have taken it upon themselves to see that the remaining tenant families are also absorbed within the rural economy.

6. The second and third policies were confined primarily to displaced agriculturists from West Pakistan who had lands outside West Punjab or were not of Punjabi origin. The area allotted to a family depended on its size. From 10 to 15 acres were allotted to each family in Alwar and Bharatpur, 16 to 24 acres of irrigated land and 16 to 32 acres of unirrigated land in Bikaner, 5 to 10 acres in Delhi and 10 acres in the Ganga Khadar and the Naini Tal Tarai areas of Uttar Pradesh. In all, 57,500 families have been settled on 7·4 lakh acres. Of them as many as 44,000 families have been settled in Rajasthan alone, especially in the districts of Alwar, Bharatpur and Shri Ganganagar in Bikaner, all of which now form part of Rajasthan.

7. Early in 1951, allotments of land were offered to 12,645 families of non-Punjabi displaced agriculturists. Of these only about 4,000 families actually moved to the land. It would appear that many of the families for whom allotments were proposed had found some means of livelihood in areas in which they were residing and were consequently unwilling to resettle on unirrigated land.

8. The vast majority of displaced agriculturists from West Pakistan may, therefore, be regarded as having been resettled. Upto the end of the year 1951-52, about Rs. 8 crores had been given as loans for the purchase of bullocks, fodder, seeds and other agricultural equipment, repair and construction of houses and wells, etc., and for the maintenance of families for the initial period of six months following allotment of land.

9. In respect of displaced persons from East Pakistan, it is estimated that about 330,000 out of 470,000 rural families have already been settled in the Eastern States on land and in occupations ancillary to agriculture. They have been so far given financial assistance exceeding

Rs. 8 crores. It is proposed to settle 50,000 families during 1952-53 and 25,000 during 1953-54 in rural areas at a further expenditure of Rs. 10·10 crores. But for the recent influx, the rural resettlement of displaced persons from East Pakistan would have been practically completed by the end of 1953-54.

URBAN RESETTLEMENT

10. The problem of urban resettlement has been one of great complexity, chiefly because of the essential differences in the economic pattern of the incoming and outgoing population. This difference has been the more marked in the case of displaced persons from West Pakistan. While the Muslim migrant from the Punjab, PEPSU, Delhi, etc., was often a labourer or an artisan, with a comparatively low standard of life, the incoming non-Muslim was frequently an industrialist, a businessman, a petty shopkeeper or one belonging to the white-collar professions and used to much better conditions of living. Secondly, as the urban economy in India, as in any other under-developed country, does not offer scope for quick expansion, the absorption of new elements on any scale presents considerable difficulty.

11. Accommodation was needed in urban areas for about 2·5 million displaced persons from West Pakistan. The Government embarked upon an extensive building programme and upto March, 1952, 150,000 houses and tenements had been built at a cost of Rs. 38 crores. It is proposed to build another 50,000 houses at a cost of about Rs. 21 crores in the course of the next two years. This programme, when completed, will have provided accommodation for about a million displaced persons. About 1·5 million persons have already found accommodation in evacuee houses. Thus, making allowances for those families who have been able to make their own arrangements or who may do so in future, it may be said that the housing problem of the displaced persons from West Pakistan will have been substantially solved by the end of 1953-54.

12. While building activity on private account was promoted by granting building sites and building loans to displaced persons and cooperative societies who could find a part of the finance themselves, the bulk of the programme in the Western Zone has been undertaken departmentally by Government or through special agencies, such as the Faridabad, Rajpura and Hastinapur Development Boards and the Sindhu Resettlement Corporation. Most of the new housing colonies are in the form of suburban extensions of existing cities and towns and have been provided with urban amenities. In addition, 10 new townships have been planned and much progress has been made in their development. They are Faridabad, Nilokheri and Chandigarh in the Punjab, Rajpura and Tripuri in PEPSU, Sardarnagar and Ulhasnagar in Bombay, Gandhidham in Kutch and Govindpuri and Hastinapur in Uttar Pradesh. The construction of these towns is expected to be completed in the main by 1953-54. Together, they are likely to provide accommodation and gainful occupation to over 400,000 persons. The experiments at Nilokheri and Faridabad are significant in themselves. They are based on the principle of self-help on a cooperative basis. If successful, they will be a stepping stone for further planning and development on a national scale.

13. It is expected that no additional construction will be necessary for displaced persons from West Pakistan after 1953-54, but a sum of Rs. 4 crores will be required for completing the development schemes in hand and paying compensation for lands and barracks acquired for housing colonies or new townships.

14. In the Eastern States, on the other hand, emphasis was laid right from the beginning on private initiative and displaced persons were given developed plots and urban loans on a fairly large scale. The Government undertook only a limited building programme. However, up to the end of 1951-52, about 9,000 houses and tenements were built by the State Governments of West Bengal, Assam, Bihar and Orissa and two new townships have been established at Fulia and Habra Baigachi. As conditions in the Eastern States are still fluid it is difficult to estimate the total number of persons for whom housing will eventually have to be provided. Nevertheless, it is proposed to build 95,000 units, in the next two years, 25 per cent of which will be built directly by the Government and the rest by displaced persons with assistance from the Government. Uptil the end of March, 1952, the total financial outlay by the Government on housing in the Eastern States was Rs. 8·8 crores.

15. Gainful employment of displaced persons has been largely achieved by providing service under the Government and imparting technical and vocational training to those fit for it, by allotment and construction of business premises and industrial undertakings, by grant of loans for small as well as large-scale businesses and by grant of financial assistance for school and college education coverings arts, science and technical courses.

(i) *Employment*—Upto the middle of 1952, the employment exchanges found employment for 1,63,000 displaced persons from West Pakistan and 31,000 from East Pakistan. In addition, the Ministry of Home Affairs set up a special Transfer Bureau for the same purpose and the Ministry of Railways also reserved 15,000 vacancies for displaced persons. It is estimated that over 80,000 persons thus received employment, although some of them had been sponsored by the employment exchanges as well and might have been shown in their returns also.

(ii) *Technical and vocational training*—A large proportion of displaced persons from towns had been occupied in distributive trades before migration and, therefore, it was felt necessary to train the younger generation among them for productive work. For that purpose arrangements were made to impart to them training in suitable vocations and crafts. The Rehabilitation Ministers' Conference in December 1950, recommended that 80,000 displaced persons should be trained. That target is being gradually achieved. By the end of March, 1952, about 52,000 persons had completed their training and 12,000 more are expected to be trained during the current financial year. It has not been possible to fix a similar target for displaced persons from East Pakistan because of the uncertainty of the situation. However, until the end of March, 1952, 8,000 displaced persons had been trained and it is hoped that 12,000 more will be trained during 1952-53. Targets for subsequent years have not yet been determined.

(*iii*) *Education*—Steps have been taken to extend the educational facilities in the country by opening new schools and colleges and increasing the capacity of existing institutions. Under the new policy introduced in July 1951, freeship concessions have been extended up to the high school standard and cash grants for books and stationery are given to deserving students. Stipends are also given to good students in colleges for training in arts, science and technical courses.

On vocational and technical training and on education of displaced persons from West Pakistan Rs. 7·39 crores had been spent up to the end of march, 1952, and a further expenditure of Rs. 2·55 crores is proposed during 1952-53 and of Rs. 1·9 crores during 1953-54. The corresponding figures for displaced persons from East Pakistan are Rs. 4·05, 0·98 and 1·56 crores respectively.

Other Rehabilitation Measures

16. The Government have also endeavoured to assist displaced artisans, business and professional men by granting them small loans upto Rs. 5,000 each. The amounts already advanced and proposed to be advanced in the next two years are shown below :

(Rupees crores)

	Upto March 1952	1952-53	1953-54
Displaced persons from West Pakistan . .	10·38	0·50	0·50
Displaced persons from East Pakistan . .	4·24	2·86	2·86

Altogether, 1,58,000 displaced persons from West Pakistan and 44,000 from East Pakistan had received loans upto the end of March, 1952, and it is estimated that about 15,300 and 11,500 families will receive loans in 1952-53 and 1953-54 respectively. Many of the displaced persons who have received loans from the Government have also filed claims under the Displaced Persons Claims Act, 1950, and most of such claims have already been verified. As a prelude to the grant of such compensation as may be possible on the basis of these claims, it has been decided that the recovery of a loan from a borrower may be postponed up to one-tenth of the total value of his verified claim. To ensure better use of sums advanced by the Government, it has now been decided that hereafter such loans will be given only to displaced persons who have either received technical and vocational training under any of the schemes of the Government and wish to set up industry of their own or who have settled in the new townships.

17. For the larger businesses, loans are advanced to displaced persons by a special agency set up by the Government, namely, the Rehabilitation Finance Administration. Upto the 31st March, 1952, the Administration had sanctioned Rs. 8·25 crores in favour of 9,621 persons, of which Rs. 4·17 crores were actually disbursed. During 1952-53 the Administration expects to disburse Rs. 2·05 crores and during 1953-54 Rs. 3 crores.

18. Financial assistance on this scale has helped to bring back into activity about 27,000 evacuee shops and 2,000 evacuee industrial establishments which have been allotted to suitable displaced persons. Apart from this, 28,000 new shops and several new markets have been built in various towns. Industries are being developed in the new townships in order to provide further scope for employment and for individual enterprise.

19. There are 74,000 displaced persons—about 38,000 from West Pakistan and about 36,000 from East Pakistan—who are being looked after by the Government as a permanent measure. They consist of destitute, old and infirm persons and their dependents and unattached women and their children. The majority of them are being maintained and looked after in Homes or infirmaries specially established for them. It is proposed that eventually the Government will not, save in exceptional cases, look after and maintain anyone outside a Home or an Infirmary. In such Homes and Infirmaries work and training are provided to the old and infirm and to women according to their physical condition and aptitude. Education is given to the children. Some of the Homes have been entrusted to non-official organisations with a view to securing the largest measure of co-operation from the public. Wellknown institutions—the Kasturba Gandhi National Memorial Trust, the Trust for Sindhi Women and Children, the Arya Pradeshak Pratinidhi Sabha, the Rama Krishna Mission and others—are assisting the Government in the field of rehabilitation. A Central Advisory Board has been set up to advise the Government on all matters pertaining to the well-being of displaced persons described in this paragraph.

20. There were numerous displaced persons who depended upon their income from immovable property in West Pakistan and who had no means of livelihood in India and who, at the same time, by reason of old age, infirmity and other causes were unable to make a living for themselves. It was decided, as a temporary measure, to grant them maintenance allowances according to a prescribed scale, subject to a maximum of Rs. 100/- per month. Under this scheme, allowances are being given to 16,000 persons every month and so far Rs. 50 lakhs have been spent on such allowances. The scheme is likely to continue until such time as compensation is awarded to displaced persons for the immovable property they have left behind in West Pakistan.

21. A special Board has been set up for the rehabilitation of displaced Harijans and under the aegies of this Board employment has been found for about 8800 displaced Harijans and accommodation in urban areas to the extent of 1123 houses and tenements. The Board has also helped 16,259 Harijan families in the matter of allotment of land and rural loans and provided 2,403 huts in the rural areas.

Expenditure on Rehabilitation

22. Up to the 31st March, 1952 the Government had incurred a total expenditure of Rs. 90·54 crores on the rehabilitation—as distinct from relief—of displaced persons. Rs. 27·81 crores are proposed to be spent during 1952-53 and Rs. 28·00 crores

during 1953-54. The table below gives the rehabilitation expenditure during the three years from 1951-52 to 1953-54 :—

(Rupees crores)

	1951-52	1952-53	1953-54	Total
Rural resettlement	3·88	4·04	2·80	10·72
Urban housing	16·11	14·34	12·00	42·45
Urban loans (other than R.F.A.) .	2·42	3·37	3·50	9·29
Loans by Rehabilitation Finance Administration	1·88	2·05	3·00	6·93
Technical training, education and other schemes	4·88	4·01	6·70	15·59
TOTAL	29·17	27·81	28·00	84·98

23. It is hoped that the bulk of the problem of rehabilitation of displaced persons from West Pakistan will be over by the end of 1953-54. Besides meeting commitments already accepted, only a few outstanding matters will need attention. For this purpose Rs. 6·20 crores will be required as shown below :—

(Rupees crores)

	1954-55	1955-56	Total: 1954-56
Housing	4·00	...	4·00
Urban loans	0·50	0·50	1·00
Vocational and technical training .	0·25	0·25	·50
Education	0·35	0·35	·70
TOTAL	5·10	1·10	6·20

24. The situation in the Eastern States, on the other hand, fluctuates fitfully and it is not possible to forecast the likely expenditure on displaced persons from East Pakistan beyond 1953-54. If the conditions remain normal, the present scale of annual expenditure which is of the order of about Rs. 11 crores (this is approximately the average of the estimated expenditure for 1952-53 and 1953-54) will have to be maintained. If conditions in East Pakistan worsen, the magnitude of the problem and therefore of the effort, will be correspondingly greater.

COMPENSATION FOR DISPLACED PERSONS

25. There has been so far no agreement between India and Pakistan on the disposal of evacuee property in the two countries. Owing to the urgency of the problem of rehabilitation and the fact that evacuee properties, particularly in urban areas, tend to deteriorate, certain steps in the direction of giving a measure of compensation to displaced persons have been taken. The quasi-permanent allotment of land in the Punjab and Pepsu has already been described. In other parts of India, the problem of giving some kind of compensation for the agricultural lands left behind by land holders of Sind, N.-W. F. P., Bahawalpur and Baluchistan still remains

to be tackled. The problem of urban properties is more complicated. In framing any scheme for their distribution it is important not to cause any large-scale dislocation. A large proportion of displaced persons from West Pakistan have now established themselves in larger or smaller measure in places where they have been living and if they are dislocated they will have to be found a new habitation as also new means of livelihood. Many urban properties are in the occupation of displaced persons who have no claims to compensation. Tentative proposals for the disposal of evacuee properties and grant of compensation have been recently worked out, but final decisions have not yet been taken.

REHABILITATION AND DEVELOPMENT

26. The rehabilitation of 7·5 million displaced persons presents numerous special problems but viewed broadly, it has to be regarded as an essential aspect of the development of the economy of the country as a whole. The expansion of the national economy by itself provides numerous opportunities for the rehabilitation of displaced persons possessing initiative and enterprise. The programme of rehabilitation is an integral part of the Five Year Plan, although it necessarily has to be kept under constant review, in particular, for meeting the exigencies of the changing situation in respect of displaced persons from East Pakistan.

CHAPTER XXXIX

EMPLOYMENT

The problem of finding employment for all the able-bodied persons willing to work is a problem common to all countries—advanced as well as industrially backward,— although the causes and the extent of such unemployment may differ from country to country. Three main types of unemployment, distinguished according to causes, are : (1) unemployment arising from deficiency in aggregate demand ; (2) unemployment arising from shortage of capital equipment or other complementary resources; and (3) frictional unemployment. The first type is mainly cyclical in character and has been recurring in all advanced countries from time to time. The second is found mainly in under-developed countries, while the third may occur in any type of economy. The goal of social policy in all countries, especially in the advanced ones, has been to achieve full employment by directing investments along certain channels chiefly and by encouraging capital formation.

2. In India, in common with other under-developed countries, production is carried on with insufficient amount of real capital per head of the population. In almost all processes of production and distribution, the techniques are relatively backward leading to various forms of unemployment, seasonal unemployment in agriculture, and disguised or even manifest unemployment in certain industries and services. It, perhaps, appears strange that an under-developed economy, in which there is shortage of goods and services, should at the same time have insufficient employment opportunities, resulting in a surplus labour force. The consequent social and economic injury cannot be exaggerated. The problem is one of devising ways and means of utilising the labour power for productive purposes so as to increase the volume of goods and services available in the country and to raise living standards all round. In formulating a solution, however, the basic fact of the shortage of land and capital equipment has always to be kept in view.

3. To assess the magnitude of the problem in quantitative terms with the existing data on the subject is an almost impossible task. There have been no attempts so far for collecting statistical material on employment and unemployment ; the only published figures at present available are the registrations and placements of employment exchanges. These figures cannot, however, give an idea of the total volume of unemployment. Firstly, employment exchanges are confined to industrial towns and the figures of registrations and placements which they compile are restricted mostly to the industrial and commercial sector. Secondly, even in the industrial sector, there is neither compulsion for the unemployed to register with the exchanges, nor is there any obligation on the part of the employer to recruit labour only through these exchanges. Even the information regarding unemployment among the industrial workers is thus inadequate. Thirdly, in the nature of the case, employment exchange statistics cannot indicate the amount of disguised unemployment which is otherwise

believed to exist. This means that the extent to which qualified persons have to accept work which does not give them the income which persons with similar qualifications get elsewhere cannot be assessed from these data. There is also to some extent registration of persons who are already in employment and who desire to seek better jobs. This tendency is reported to exist in the more qualified section of registrants, but to the extent a region maintains these persons on the register of employment seekers, there is an over-estimate of the number unemployed. In spite of these serious limitations, the following table containing occupational distribution of the applicants on the live register of the employment exchanges, does, to some extent, confirm the popular belief that unemployment is on the increase. This increase is mostly among the unskilled and clerical categories:—

Occupational Distribution of Applicants on Live Register

Month	Number on live register of applicants for employment			
	Technical	Clerical	Unskilled	Total
Dec. 1947 . . .	42,194	44,468	84,942	1,71,604
Dec. 1948 . . .	35,012	62,320	86,546	1,83,878
Dec. 1949 . . .	41,115	63,519	1,27,676	2,32,310
Dec. 1950 . . .	45,623	77,745	1,64,108	2,87,476
Dec. 1951 . . .	41,469	85,057	1,62,445	2,88,971
March 1952 . .	43,947	88,566	1,68,682	3,01,195
June 1952 . . .	47,868	1,10,920	1,76,864	3,35,652
Oct. 1952 . . .	49,879	1,20,221	1,94,579	3,64,679

4. In this country the problem of unemployment and under-employment seems to have been there for a long time. Its awareness is manifest in the fact that the nationalist movement in the earlier decades of this century laid a great emphasis on propagating the 'swadeshi' idea and the promotion of khadi and other village industries. The two wars to some extent obscured the issue during their duration and for a short period thereafter. The main factors which have aggravated the problem are the following :—

(*a*) the rapid growth of population ;

(*b*) the disappearance of the old rural industries which provided part time employment to a large number of persons in the rural areas ;

(*c*) inadequate development of the non-agricultural sector from the point of view of employment, (in spite of the considerable development during the last forty years, the shift of occupation from agricultural to non-agricultural sector since 1911 is only about 3%) ;

(*d*) the large displacement of population as a result of partition.

5. One of the objects of the Plan is to increase employment opportunities and to raise the standard of living of the masses. Among the measures intended to be taken to tackle the problem of unemployment, foremost consideration is given to the rural sector on account of the magnitude and seriousness of the problem there. Moreover, offer of better

employment opportunities in the rural sector will have a salutary effect on the unemployment situation in the urban sector. The extent of unemployment in rural areas is, however, difficult to estimate. Some authorities put the figure at 30% ; but in addition to this, there is chronic under-employment. The quantitative estimates of this are even more difficult to work out. The reports of the Agricultural Labour Enquiry of the Government of India when published may throw some light on this subject.

6. Of the various measures proposed to be taken in the Plan to reduce the incidence of rural unemployment mention may be made of the major and minor irrigation works. These are expected to irrigate over 19 million acres. There are large scale land reclamation schemes which will, to some extent, help to relieve the pressure on the existing land resources. The large-scale unemployment and under-employment in rural areas can, however, be tackled only by providing the village community with other avenues of employment in addition to agriculture. The revival and development of rural industries have therefore found a central place in the rural development programmes. These industries have been considered both economically and socially desirable because the requirements of capital and skill are low. For the same amount of capital investment, these industries provide more employment than large scale industries. The Plan has, therefore, made provision for development of 12 village industries. The experience gained as a result of the development of these industries should be valuable in reviving and developing other village industries. Equally important is the revival of old handicrafts, the principal feature of which is skilled craftsmanship. The Plan makes various suggestions for the rehabilitation of these handicrafts. The financial provision for village industries and handicrafts for the period of the Plan is Rs. 15 crores. The cess proposed to be levied on large-scale industries to provide finance for the development of small scale industries will encourage the starting of more small scale industries and thus provide additional employment. Two other steps, which might help in reducing the pressure on employment in rural areas, are : (*a*) the extension of mixed farming and (*b*) the undertaking of public work programmes in slack agricultural seasons. The possibilities of these measures will be investigated.

7. Unemployment or under-employment is not confined to the rural sector ; it also exists in the urban centres. The increasing pressure on land has forced a large number of able-bodied persons to go to towns and cities in search of employment. They are mostly without much education and possess but little technical skill. There is, therefore, keen competition for unskilled jobs in factories, and in a number of small occupations ; the tertiary sector, especially the domestic service, absorbs also a good deal of this labour. Hotels, restaurants, stations and other public places are other sources of employment. Most of the occupations are generally overstaffed and the wages paid consequently are extremely low. The problem has to some extent been aggravated after the end of the war due to the difficulties faced by a number of small-scale industries, which came to be started during war-time on account of the ceasing of imports. Even industries like jari weaving, power-looms etc. which have existed for a long time have been encountering difficulties of one type or the other. These industries occupy the same place in urban centres as village industries do in rural areas. The solution of this unemployment problem lies mainly in the contemplated expansion of existing

large-scale industries and the starting of new ones. Along with this, suggestions are made in the Plan to save the existing small-scale industries and also to encourage the starting of similar new industries, especially those industries which can serve as complementary to large-scale industries. The provision made for small-scale industries in the Plan has to be viewed in this light.

8. The question has frequently been raised as to what would be the quantitative effect of the plan on employment. For this purpose, on the one side, information would be necessary on the estimates of available population for gainful occupation in various age groups, and on the other, on the expected volume of employment in different economic activities in the country, primary, secondary, and tertiary. Fairly reliable statistics of employment are available only in respect of organised productive activities. In respect of unorganised processes of production and distribution such as, agriculture, forests, fishing, animal husbandry, small-scale industries, trade etc. the information can be had fully from Census Reports for the year of enumeration but there is no machinery to keep this information up-to-date. About unemployment, practically no data are available. It is also necessary to have estimates of the man-power requirements in all branches of economic activity. The absence of all these statistics makes it difficult to assess with any degree of accuracy the results of the plan on the employment situation. But this does not mean that attempts should not be made in the direction of estimating future employment trends, however imperfect such attempts may be. These imperfections have to be viewed against the background of physical and organisational difficulties and will help to build a clearer picture for future work of this kind. It is for this purpose that an attempt has been made to work out the effect of the Plan on employment in certain schemes of development. We recognise that the estimates given here are very rough approximations and may perhaps be wide of the mark. The assumptions made in every case, therefore, have been clearly stated.

(*a*) *Industry*—The estimates in case of some industries have been made on the basis of information collected through employers' organisations as regards the future labour requirements. But in majority of cases they have been worked out on the assumption that additional production will lead to proportionate rise in employment which may or may not be true in most of the cases because of so many other factors, *viz.*, idle labour engaged at the moment, revised man-machine ratio in view of the installation of new machinery, rationalisation schemes under contemplation and so on. The right approach to this problem, therefore, will be to call for the forecasts from the employers themselves and to test them in the light of objective standards, evolved after tripartite consultations (Government, employers and workers). Though the authenticity of this method is fully recognised, it has not been possible to get in touch with each and every employer and even in case of those industries where this has been possible, the estimates given by employers could not be tested because of the non-existence of any objective standards. The industries in case of which such estimates could be had are agricultural machinery, power alcohol, salt and one or two light engineering industries. No estimates have been possible in case of fertilizers, fine chemicals, pharmaceuticals, heavy chemicals, railway rolling stock and some of the rayon industries due to the non-availability of employment figures in the base year. Subject

to all these limitations it has been estimated that the additional employment in this sector will be of the order of 4 lakhs inclusive of additional employment offered in small-scale industries.

(*b*) *Major irrigation and power projects*—An expenditure of about Rs. 100 crores a year is contemplated under the Plan for the construction of major irrigation and power projects. Assuming that 20 per cent of this would be spent on wages (direct and indirect) and that worker's average earnings would be about Rs. 750 per annum (Rs. 2-8-0 per day for 300 days), the resulting employment will be about 2 1/2 lakhs annually for the period of the Plan.

(*c*) *Agriculture*—On completion of the irrigation projects, the additional area irrigated will be nearly 19 million acres. Mostly this will lead to fuller employment rather than additional employment. It is estimated, however, that 30 per cent of the area may be expected to require the attention of new hands. Taking an economic holding to be of the size of 4 acres per person employed, major irrigation schemes will provide additional employment to 14 lakh persons in 1955-56. Additional employment for 1 1/2 lakhs of persons annually will result from repairs to tanks etc. for minor irrigation schemes.

Apart from this, additional employment in agriculture will also result from land-reclamation schemes which will bring 7·4 million acres of new land under cultivation by 1955-56. Taking an economic holding of the size of 10 acres per cultivator in the case of such land the resultant employment will be for about 7 1/2 lakh persons. These estimates do not take into account the fuller employment accruing to under-employed agricultural population as a result of minor irrigation schemes and schemes of intensive cultivation and improved agriculture.

(*d*) *Minerals*—The policy advocated by the Commission regarding minerals relates to their conservation rather than their exploitation. The emphasis has been more on improved methods of mining and research and not on suggesting targets for increase in production. The additional production will be necessary only in case of iron ore to feed the iron and steel plants. This will lead to employment for 4,000 persons which may be considered negligible.

(*e*) *Building and construction*—The Plan makes provision for the construction of about 25,000 houses annually for industrial workers. It has been worked out that 600 man-days are required to build a house of the specifications recommended in the Plan. 50,000 workers of all categories will thus be annually employed on this project. In addition to this, 50,000 persons can be assumed to find employment in building activity in the private sector.

(*f*) *Roads*—Another major item of additional employment is roads. An expenditure of Rs. 20 crores a year is envisaged during the Plan period. Assuming that 60 per cent of this will go for wages and assuming the average annual wage per person at Rs. 600 a year (*i.e.*, Rs. 2 per day, for 300 days) the additional annual employment will be for 2 lakhs of persons.

(*g*) *Cottage industries*—Considerable additional employment will result from cottage and small-scale industries. It has been estimated that development schemes in this sector will give additional employment to about 20 lakhs of persons and provide fuller employment to about 36 lakhs under-employed persons. Bulk of additional employment (*i.e.*, 18 lakhs) will result from cotton handloom industry.

(*h*) *Tertiary sector and local works*—The employment figures given above consider the sectors in which there is going to be direct investment and development. But the development of agriculture, industries and roads, major and minor irrigation projects, and the building and construction activities will lead to the development of the tertiary sector *e.g.*, there will be more demand for transport, storage, banking and other kinds of services. This sector will, therefore, provide additional employment, although any estimate of such employment will be difficult to make. Similarly, there will be increased activity in regard to works undertaken by local bodies and therefore, more employment. The figures worked out have not taken into account this source of employment due to the difficulty of estimating the figures.

Employment Among the Educated

9. The problem of unemployment among the educated has not received due attention elsewhere in the report. It is, therefore, proposed to deal with it here in greater detail. The problem in its present form is not new. Between the two wars unemployment of the educated had assumed serious proportions everywhere including this country where perhaps it assumed a more acute form. The war, to some extent, helped in temporarily relieving this unemployment by providing opportunities of service in armed forces and in the expanded avenues of production and services which were dependent on the war. There was a time during the war and in the immediately post-war years when it was difficult to get persons of one's choice to man the production processes. After the end of the war and with the demobilization of armed personnel and large-scale retrenchment in industries producing materials for the armed forces, and the consequent retrenchment in Government, commercial and business houses, the problem has again come to the forefront. The awareness of Government of the situation is evident from the fact that simultaneously with demobilisation, training facilities were provided by Government for equipping the demobilised personnel for alternative employment. There was also some reservation of vacancies for such persons, but its result was to deny corresponding opportunities to fresh entrants. Partition of the country further aggravated the problem because of the preferences shown by Government to the displaced persons in the matter of employment. It is, therefore, necessary to seek a solution, not through the negative approach of relief to the unemployed, but with a positive approach for organising employment as a part of economic development.

10. Subject to the remarks made above regarding the employment exchange figures, the position of the educated unemployed as revealed by the employment exchanges over a period of five years, is shown by the following figures :

	Dec. 1947	Dec. 1948	Dec. 1949	Dec. 1950	Dec. 1951	Oct. 1952
Technical* .	42,194	35,012	41,115	45,623	41,469	49,879
Clerical .	44,468	62,320	63,519	77,745	85,057	120,221

*In the absence of a detailed classification, all the persons given under this head are regarded as educated.

The figures show that the unemployment among the technical personnel is smaller as compared with the clerical personnel and that while the number of unemployed technical persons has gone up a little over a period of 5 years, the number of persons seeking clerical posts has gone up considerably over the same period. As against this, the following figures obtained as a result of an *ad hoc* enquiry conducted by the Directorate General of Resettlement and Employment last year, illustrate the position of the employment opportunities for the technical and clerical personnel :—

	Number of vacancies made available by employers	Percentage of vacancies to applicants awaiting jobs
Technical	5,180	12.5
Clerical	3,212	3.8

This means that of every 100 unemployed technical persons, only about 12 persons could be provided with jobs, while in the case of clerical jobs the vacancies were only 4 for every 100 unemployed registrants. This indicates that, while the problem of unemployment amongst the technical personnel is serious enough, in the clerical cadres it is at least thrice as bad.

11. A recent investigation undertaken by the Employment Exchanges Organisation into the number of matriculates and graduates seeking employment assistance reveals that over a lakh of persons with such education were in search of employment through the exchanges. 14% of these were University graduates. Amongst the persons with University degrees the largest number of employment seekers was of graduates in subjects other than engineering and medicine. Even these latter claim nearby 800 graduate registrants. This is a fairly large number in view of the fact that such personnel has been reported to be in short supply in the country. In these categories, therefore, unemployment seems to be either structural or resulting out of distaste for mobility. Another finding of this investigation was that the unemployment among graduates was mostly in non-technical lines. This reinforces the conclusions reached by the Scientific Man-power Committee.

12. The data discussed above have obviously their limitations. One thing, however, is clear that the unemployment in this class is on the increase and suitable measures appear to be necessary. The First Five Year Plan lays emphasis on increasing agricultural production and at the same time creating a base for future industrial expansion. This limits the immediate expansion of employment opportunities for the educated unemployed. It is only when a more rapid expansion of the industrial sector than is envisaged in the present Plan takes place that there will be a possibility of increasing avenues of employment for the educated class. As a matter of fact, the experience of other countries shows that " although the expansion rate of the manual labour force employed by processing and production industries seems as a whole to have slackened to a great extent as a result of the concentration and extension of undertakings, improvements in technique, mechanization, and the scientific organization of labour, these same factors nevertheless give rise to a considerable increase both in the administration, financial, supervisory and marketing services and also in the preparation, organization, co-ordination and supervision of the processes assigned to

manual workers. An increasingly important place is also being reserved for research and laboratory work. All these manifold tasks involving increasing specialization, are carried out by commercial and office workers, supervisors, technicians and managerial grades of staff of every kind, *i.e.* by non-manual workers ". These are no doubt long-term solutions but some immediate steps are necessary to deal with the problem. It seems necessary that the plans for education, especially in the post-primary stages, will have to be so framed that our future requirements will not suffer for want of structural adjustments. In this connection we recommend that the suggestions made by the Scientific Man-power Committee for overcoming shortages in certain technical lines should be given effect to, if necessary by reassessing our requirements in the light of changes that have taken place since 1947.

13. In addition, we suggest the following short-time remedies :

(*a*) We have observed that there is some unemployment even among technical personnel, *e.g.* engineers and doctors. This may be due to unattractive service conditions of certain posts and concentration in large cities and towns. It is, therefore, necessary to take measures to remedy this situation. It has to be seen that the pay offered is consistent with the cost of training of such personnel. Inducements, such as subsidising of private dispensaries, which form a part of some of the State plans, should be offered to doctors elsewhere also for settling down in villages.

(*b*) As the University Commission has observed the utility to employers of graduates with certain qualifications, *e.g.*, commerce, can be increased if the present purely theoretical knowledge imparted in colleges is supplemented by practical training. Its recommendation to impart such practical training either during college terms or during the periods of vacation deserves consideration.

(*c*) It has been seen that the problem of unemployment is very acute amongst those seeking clerical posts. Amongst the educated classes there is a disinclination for manual jobs. They prefer soft jobs to manual work even if it means waiting and smaller emoluments. The result is keen competition and large scale unemployment among new entrants. It is not only graduates and matriculates who compete for these posts, but even non-matriculates who are not qualified to hold these posts, try for these jobs, rather than accept manual jobs. On the other hand there is bound to be a big demand for manual work of a skilled or specialised kind. Educated persons should be persuaded to rid themselves of prejudice against manual employment and should be encouraged to receive sufficient training for manual jobs rather than cling to clerical jobs.* It is expected that the reorientation of the educational system with emphasis on basic education as proposed in the Plan will be a corrective factor in future to bring about the desired change.

(*d*) Certain special problems arise in case of young persons without experience as well as in case of older persons. In the former case employers are usually reluctant to engage persons without experience. This can be solved only with the help of employers by providing apprenticeship training to such persons. In case of the latter category of persons, such persons

*It is reported that an investigation was recently undertaken by a social scientist in Delhi. The main conclusion of this investigation seems to be "that the educated middle class generally has a very unrealistic conception of jobs for themselves".

may be precluded from public employment because of age bar, while private employers may prefer young persons to older people. It is only by reservation of certain number of posts in public service and by persuading private employers to engage such persons, especially those with family responsibilities, that the unemployment of such persons can be tackled.

(*e*) The better distribution of educated persons based on a choice of studies in accordance with the employment possibilities offered can be brought about only by collecting full and accurate information on present and future manpower requirements and reserves. It is, therefore, necessary to develop vocational counselling and guidance services and to see that greater use is made of them both by the young people intending to enter into service and also by the redundant workers who have already joined them.

14. All the above measures will no doubt bring a better distribution of educated labour force among different occupations helping to divert the people from occupations which are crowded to those where there is a shortage. In addition to these measures it is necessary that there should be a reduction in the number of job seekers. For bringing this about the following recommendations are made:

(*a*) It is quite conceivable that in the educated families there may be a desire for starting an independent establishment requiring small capital. A list will be made of small scale industries which could be started with different amounts of capital ranging from Rs. 500 to Rs. 5,000. Government should help them by advancing loans for initial capital and providing vocational training facilities. It should be a condition that the major portion of the fund required should be invested by the applicants for such loans. In such cases help should also be rendered for procuring raw materials and for disposal of the finished goods. The principle of co-operation in reference to such activities should be encouraged. Care should, however, be taken that such funds will not go for investment in distributive trades. What is required in short is the Extension to the educated unemployed of a scheme envisaged for assisting the displaced persons.

(*b*) Trading Estates in the United Kingdom provide factory sites or built up factory premises, with such facilities as transport and supply of electricity, water and gas laid on, to small amateur manufacturers on a rental basis. These facilities, which individuals could not have been able to provide except at very high cost have made possible the establishment of small and medium sized factories in selected areas. In the U.K. the Government took initiative in encouraging private capital to provide building up these estates after the great depression to reduce unemployment and to bring about better distribution of industries. While the objective of dispersal of industries is only a long-term process, the idea of trading estates can be experimented upon if it can help to some extent solve the unemployment problem of the educated classes. The built up factory accommodation with all the other ancillary facilities (like electricity, water, etc.) will provide the right type of incentive for persons who want to work hard and have small amounts to invest or can be given a measure of assistance. Some States have already taken initiative in the matter.

CONCLUSION

In our Introduction we have referred to the process of consultation and discussion which has preceded the preparation of the Plan which we now submit to the Government. In preparing this Plan we have acted in close co-operation with the Ministries of the Central Government and the Governments of the States and with leaders of opinion and representatives of different interests in the country. Although the task of drawing up a plan of development has been in some measure concluded, we are conscious that planning is a continuing process and from time to time adjustments in policy and programmes will be needed. The submission of the Plan marks, however, a stage in the journey, and prepares the way for the harnessing of the nation's effort and resources for the fulfilment of the Plan.

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GULZARILAL NANDA,
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G. DURGABAI,
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N. R. PILLAI,
Secretary.
TARLOK SINGH,
Deputy Secretary.
December 7, 1952.

*Sri G. L. Mehta remained a Member of the Planning Commission until August 26, 1952. Shri R. K. Patil served as a Member until November 10, 1951, and was subsequently associated with the work of the Commission. With their permission, their signatures have been appended to the Plan.